Manitowoc

S Model & Ice Beverage QuietQube® Ice Machines with CVD® Technology

Installation, Use & Care Manual

This manual is updated as new information and models are released.
Visit our website for the latest manual. www.manitowocfsg.com

America's #1 Selling Ice Machine

Part Number 000002477 3/08

Manitowoc Foodservice Group

Safety Notices

As you work on Manitowoc equipment, be sure to pay close attention to the safety notices in this manual. Disregarding the notices may lead to serious injury and/or damage to the equipment.

Throughout this manual, you will see the following types of safety notices:

⚠ Warning

Text in a Warning box alerts you to a potential personal injury situation. Be sure to read the Warning statement before proceeding, and work carefully.

⚠ Caution

Text in a Caution box alerts you to a situation in which you could damage the equipment. Be sure to read the Caution statement before proceeding, and work carefully.

Procedural Notices

As you work on Manitowoc equipment, be sure to read the procedural notices in this manual. These notices supply helpful information which may assist you as you work.

Throughout this manual, you will see the following types of procedural notices:

Important

Text in an Important box provides you with information that may help you perform a procedure more efficiently. Disregarding this information will not cause damage or injury, but it may slow you down as you work.

NOTE: Text set off as a Note provides you with simple, but useful, extra information about the procedure you are performing.

Read These Before Proceeding:

⚠ Caution

Proper installation, care and maintenance are essential for maximum performance and trouble-free operation of your Manitowoc equipment. Read and understand this manual. It contains valuable care and maintenance information. If you encounter problems not covered by this manual, do not proceed, contact Manitowoc Foodservice Group. We will be happy to provide assistance.

Important

Routine adjustments and maintenance procedures outlined in this manual are not covered by the warranty.

⚠ Warning

PERSONAL INJURY POTENTIAL

Do not operate equipment that has been misused, abused, neglected, damaged, or altered/modified from that of original manufactured specifications.

NOTE: SAVE THESE INSTRUCTIONS.

We reserve the right to make product improvements at any time.
Specifications and design are subject to change without notice.

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Section 1
General Information

Model Numbers

This manual covers the following models:

Ice Machine Head Section	CVD® Condensing Unit
SD0672C SY0674C IB0624YC IB0622DC	CVD0675
SD0872C SY0874C IB0824YC IB0822DC	CVD0885
SD1072C SY1074C	CVD1085
IB1024YC IB1022DC	CVD1185
SD1272C SY1274C	CVD1285
SD1472C SY1474C	CVD1485 CVD1486
SD1872C SY1874C	CVD1885
SD2172C SY2174C	CVD2085

For 3 phase electrical option: add the number “3” to the end of model number (CVD10853).

⚠ Warning

PERSONNEL INJURY POTENTIAL

Do not operate equipment that has been misused, abused, neglected, damaged, or altered/modified from that of original manufactured specifications.

⚠ Warning

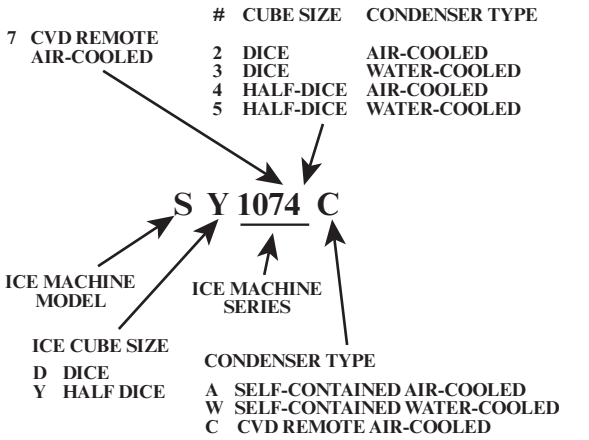
When installed on a bin an ice deflector is required.

Prior to using a non-Manitowoc ice storage system with Manitowoc ice machines, contact the manufacturer to assure their ice deflector is compatible with Manitowoc ice machines.

⚠ Warning

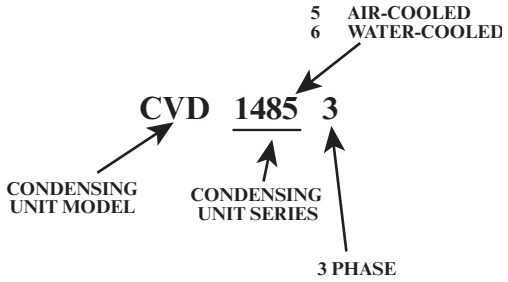
S1470C/S1870C/S2170C ice machines are not approved for use on Manitowoc B570 series bins.

How to Read a Model Number



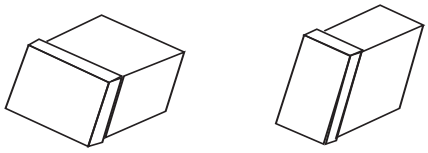
SV3106

Remote Condensing Unit



SV3107

Ice Cube Sizes



SV3105

Dice

7/8" x 7/8" x 7/8"
2.22 x 2.22 x 2.22 cm

Half Dice

3/8" x 1-1/8" x 7/8"
0.95 x 2.86 x 2.22 cm

Accessories

Contact your Manitowoc distributor for these optional accessories:

ICE BAGGER

Maximize profits from bagged ice sales with this convenient accessory. This sturdy unit rests on the bin door frame, and adapts for left or right side filling.

ICE DEFLECTOR

An ice deflector is required when the ice machine is installed on a bin. An ice deflector is not required when the ice machine is installed on a dispenser.

⚠ Warning

Manitowoc QuietQube® ice machines require a deflector when installed on an ice storage bin.

Prior to using a non-Manitowoc ice storage system with Manitowoc ice machines, contact the manufacturer to assure their ice deflector is compatible with Manitowoc ice machines.

ELECTRONIC BIN THERMOSTAT KIT - K00364

This kit reduces overfill and condensation issues and can be used on any Manitowoc ice machine installed on an ice dispenser. The kit includes a universal mounting bracket which attaches over the dispenser side wall.

Important

Ice/Beverage Ice Machines require the installation of a thermostat to maintain the dispenser ice level. The thermostat ships with the ice machine.

CVD1486 WATER COOLED CONDENSING UNIT (With High Pressure Water Regulating Valve)

A special order condensing unit is available that allows condenser water inlet pressure up to 350 psig (24.13 bar).

STACKING TWO ICE MACHINES ON A SINGLE DISPENSER

Ice/Beverage Ice Machines cannot be stacked.

S QuietQube ice machines cannot be stacked. However an adapter is available that allows two S QuietQube ice machines to be placed side by side on 60” Manitowoc F & B style bins. This requires an installation kit that is necessary to allow access to the shut-off valves during installation and will improve access during future service. Refer to sales literature to determine the proper installation kit for you application.

ARCTIC PURE WATER FILTER SYSTEM

Engineered specifically for Manitowoc ice machines, This water filter is an efficient, dependable, and affordable method of inhibiting scale formation, filtering sediment, and removing chlorine taste and odor.

MANITOWOC CLEANER AND SANITIZER

Manitowoc Ice Machine Cleaner and Sanitizer are available in convenient 16 oz. (473 ml) and 1 gal (3.78 l) bottles. These are the only cleaner and sanitizer approved for use with Manitowoc products.

Cleaner Part Number	Sanitizer Part Number
AuCS®-SO - 94-0546-3	AuCS®-SO - 94-0565-3
AuCS®-SI - 40-1326-3	AuCS®-SI - 40-1327-3

GUARDIAN SACHET PACKETS

Guardian sachet packets release chlorine dioxide on a controlled basis to inhibit the growth of bacteria and slime.

Guardian sachet packets are available through your local Manitowoc Ice Machine dealer.

DISPENSER

A counter-top dispenser is ideal for cafeterias and many types of self-service facilities. Manitowoc auto-fill, floor-standing ice dispensers meet the strict sanitary requirements of the food service, lodging and health care industries.

AUCS® AUTOMATIC CLEANING SYSTEM

This accessory reduces equipment cleaning expense. The AuCS® accessory monitors ice making cycles and initiates cleaning procedures automatically.

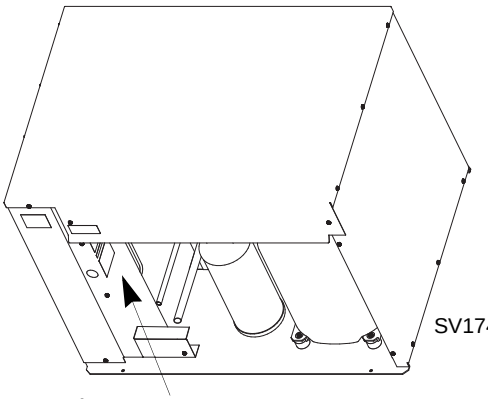
Model/Serial Number Location

Record the model and serial number of your ice machine and bin or dispenser in the space provided below.

These numbers are required when requesting information from your local Manitowoc distributor, service representative, or Manitowoc Ice, Inc.

The model and serial number are listed on the OWNER WARRANTY REGISTRATION CARD. They are also listed on the MODEL/SERIAL NUMBER DECAL affixed to the ice machine head section and condensing unit. Both model/serial numbers must be referenced to obtain warranty or service information.

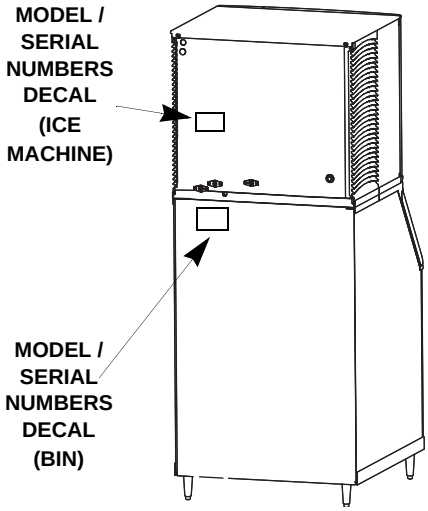
Condensing Unit



SV1746

MODEL / SERIAL NUMBERS DECAL (CVD CONDENSING UNIT)

Ice Machine Head Section



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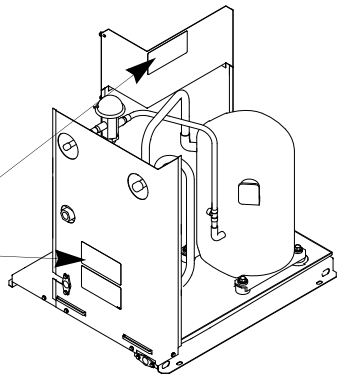
CVD1486 Condensing Unit



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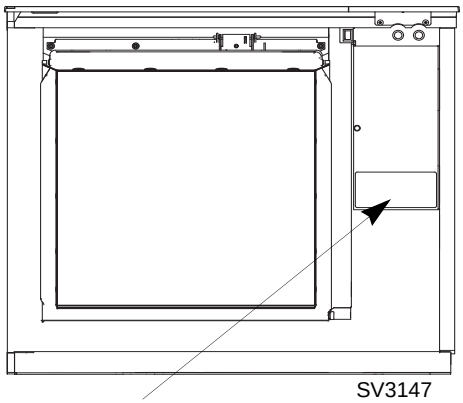

SV3147

INSIDE FRONT COVER (ICE MACHINE HEAD SECTION)

FRONT OF CONTROL BOX OR SIDE OF CONTROL BOX

Model/Serial Number Location

	Ice Machine	Bin or Dispenser	CVD Condensing Unit	AuCS Accessory
Model Number				
Serial Number				

Owner Warranty Registration Card

GENERAL

The packet containing this manual also includes warranty information. Warranty coverage begins the day the ice machine is installed.

Important

Complete and mail the OWNER WARRANTY REGISTRATION CARD as soon as possible to validate the installation date.

If the OWNER WARRANTY REGISTRATION CARD is not returned, Manitowoc will use the date of sale to the Manitowoc Distributor as the first day of warranty coverage for your new ice machine.

Warranty Coverage

COMMERCIAL ICE MACHINE LIMITED WARRANTY

The following Warranty outline is provided for your convenience. For a detailed explanation, read the warranty bond shipped with each product.

Contact your local Manitowoc Distributor or Manitowoc Ice, Inc. if you need further warranty information.

PARTS

1. Manitowoc warrants the ice machine against defects in materials and workmanship, under normal use and service for three (3) years from the date of original installation.
2. The evaporator and compressor are covered by an additional two (2) year (five years total) warranty beginning on the date of the original installation.

LABOR

1. Labor required to repair or replace defective components is covered for three (3) years from the date of original installation.
2. The evaporator is covered by an additional two (2) year (five years total) labor warranty beginning on the date of the original installation.

EXCLUSIONS

The following items are not included in the ice machine's warranty coverage:

1. **Normal maintenance**, adjustments and cleaning as outlined in this manual.
2. Repairs due to unauthorized modifications to the ice machine or use of non-standard parts without prior written approval from Manitowoc Ice, Inc.
3. Damage caused by improper installation of the ice machine, electrical supply, water supply or drainage, or damage caused by floods, storms, or other acts of God.
4. **Premium labor rates** due to holidays, **overtime**, etc.; travel time; flat rate service call charges; mileage and miscellaneous tools and material charges not listed on the payment schedule. Additional labor charges resulting from the inaccessibility of equipment are also excluded.
5. Parts or assemblies subjected to misuse, abuse, neglect or accidents.
6. Damage or problems caused by installation, cleaning and/or maintenance procedures inconsistent with the technical instructions provided in this manual.

AUTHORIZED WARRANTY SERVICE

To comply with the provisions of the warranty, a refrigeration service company qualified and authorized by a Manitowoc distributor, or a Contracted Service Representative must perform the warranty repair.

NOTE: If the dealer you purchased the ice machine from is not authorized to perform warranty service; contact your Manitowoc distributor or Manitowoc Ice, Inc. for the name of the nearest authorized service representative.

SERVICE CALLS

Normal maintenance, adjustments and cleaning as outlined in this manual are not covered by the warranty. If you have followed the procedures listed in this manual, and the ice machine still does not perform properly, call your Dealer, Local Distributor or the Service Department at Manitowoc Ice, Inc.

RESIDENTIAL ICE MACHINE LIMITED WARRANTY

WHAT DOES THIS LIMITED WARRANTY COVER?

Subject to the exclusions and limitations below, Manitowoc Ice, Inc. ("Manitowoc") warrants to the original consumer that any new ice machine manufactured by Manitowoc (the "Product") shall be free of defects in material or workmanship for the warranty period outlined below under normal use and maintenance, and upon proper installation and start-up in accordance with the instruction manual supplied with the Product.

HOW LONG DOES THIS LIMITED WARRANTY LAST?

Product Covered	Warranty Period
Ice Machine	Twelve (12) months from the sale date

WHO IS COVERED BY THIS LIMITED WARRANTY?

This limited warranty only applies to the original consumer of the Product and is not transferable.

WHAT ARE MANITOWOC ICE'S OBLIGATIONS UNDER THIS LIMITED WARRANTY?

If a defect arises and Manitowoc receives a valid warranty claim prior to the expiration of the warranty period, Manitowoc shall, at its option: (1) repair the Product at Manitowoc's cost, including standard straight time labor charges, (2) replace the Product with one that is new or at least as functionally equivalent as the original, or (3) refund the purchase price for the Product. Replacement parts are warranted for 90 days or the balance of the original warranty period, whichever is longer. The foregoing constitutes Manitowoc's sole obligation and the consumer's exclusive remedy for any breach of this limited warranty. Manitowoc's liability under this limited warranty is limited to the purchase price of Product. Additional expenses including, without limitation, service travel time, overtime or premium labor charges, accessing or removing the Product, or shipping are the responsibility of the consumer.

HOW TO OBTAIN WARRANTY SERVICE

To obtain warranty service or information regarding your Product, please contact us at:
MANITOWOC ICE, INC.
2110 So. 26th St.
P.O. Box 1720,
Manitowoc, WI 54221-1720
Telephone: 920-682-0161 Fax: 920-683-7585
www.manitowocice.com

WHAT IS NOT COVERED?

This limited warranty does not cover, and you are solely responsible for the costs of: (1) periodic or routine maintenance, (2) repair or replacement of the Product or parts due to normal wear and tear, (3) defects or damage to the Product or parts resulting from misuse, abuse, neglect, or accidents, (4) defects or damage to the Product or parts resulting from improper or unauthorized alterations, modifications, or changes; and (5) defects or damage to any Product that has not been installed and/or maintained in accordance with the instruction manual or technical instructions provided by Manitowoc. To the extent that warranty exclusions are not permitted under some state laws, these exclusions may not apply to you.

EXCEPT AS STATED IN THE FOLLOWING SENTENCE, THIS LIMITED WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY OF MANITOWOC WITH REGARD TO THE PRODUCT. ALL IMPLIED WARRANTIES ARE STRICTLY LIMITED TO THE DURATION OF THE LIMITED WARRANTY APPLICABLE TO THE PRODUCTS AS STATED ABOVE, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.
Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

IN NO EVENT SHALL MANITOWOC OR ANY OF ITS AFFILIATES BE LIABLE TO THE CONSUMER OR ANY OTHER PERSON FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND (INCLUDING, WITHOUT LIMITATION, LOSS PROFITS, REVENUE OR BUSINESS) ARISING FROM OR IN ANY MANNER CONNECTED WITH THE PRODUCT, ANY BREACH OF THIS LIMITED WARRANTY, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY.
Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

HOW STATE LAW APPLIES

This limited warranty gives you specific legal rights, and you may also have rights that vary from state to state or from one jurisdiction to another.

REGISTRATION CARD

To secure prompt and continuing warranty service, this warranty registration card must be completed and sent to Manitowoc within thirty (30) days from the sale date. Complete the following registration card and send it to Manitowoc.

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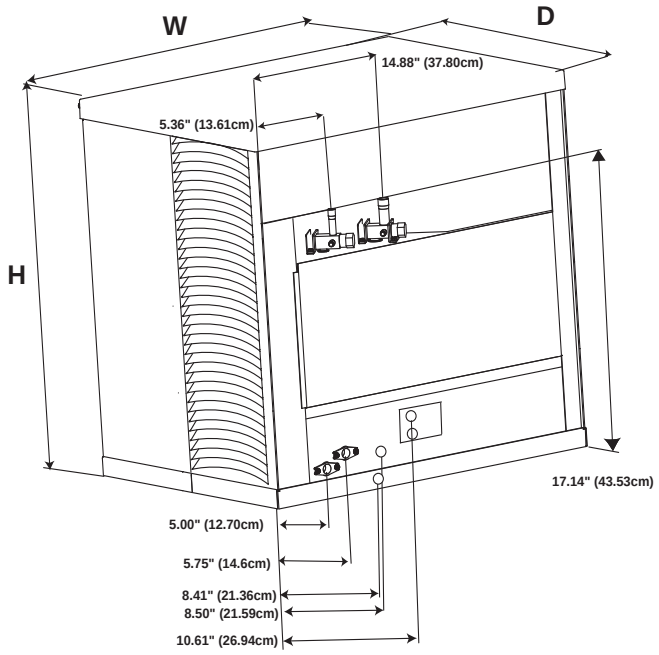
Section 2
Installation Instructions

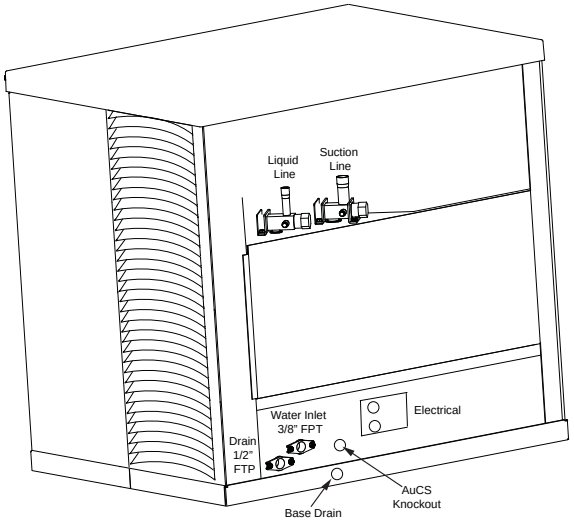
Ice Machine Dimensions

Important

Failure to follow these installation guidelines may affect warranty coverage.

S0600C/S0850C/S1000C/S1200C ICE MACHINES



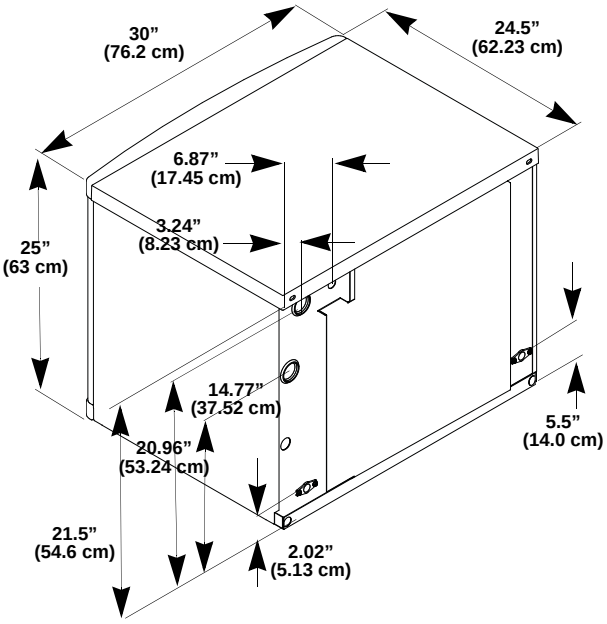


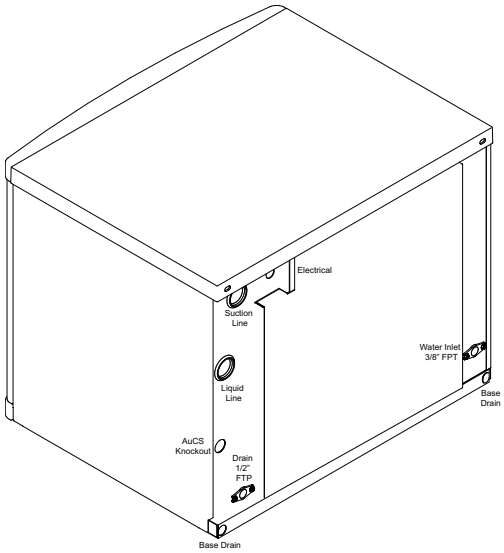
Ice Machine	Dimension D	Dimension W	Dimension H
S0600C	24.5 in (62.2 cm)	30 in (76.2 cm)	21.5 in (54.6 cm)
S0850C	24.5 in (62.2 cm)	30 in (76.2 cm)	26.5 in (67.3 cm)
S1000C	24.5 in (62.2 cm)	30 in (76.2 cm)	29.5 in (74.9 cm)
S1200C	24.5 in (62.2 cm)	30 in (76.2 cm)	29.5 in (74.9 cm)

Stacking Two Ice Machines on a Single Storage Bin

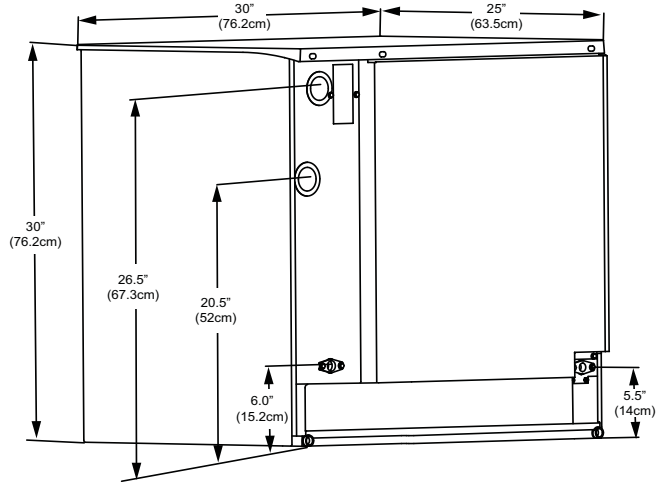
S QuietQube ice machines cannot be stacked. However an adapter is available that allows two S QuietQube ice machines to be placed side by side on 60” Manitowoc F & B style bins.

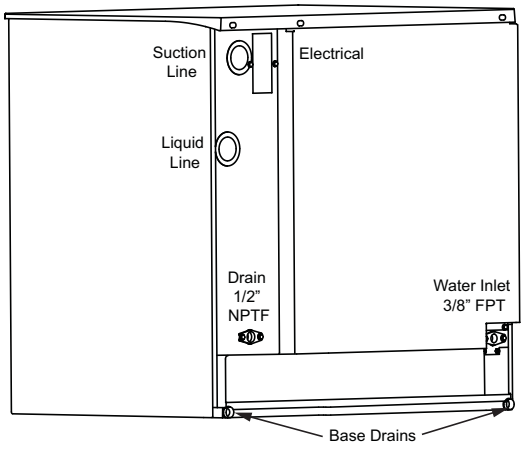
S1470C ICE MACHINES





S1870C/S2170C ICE MACHINES



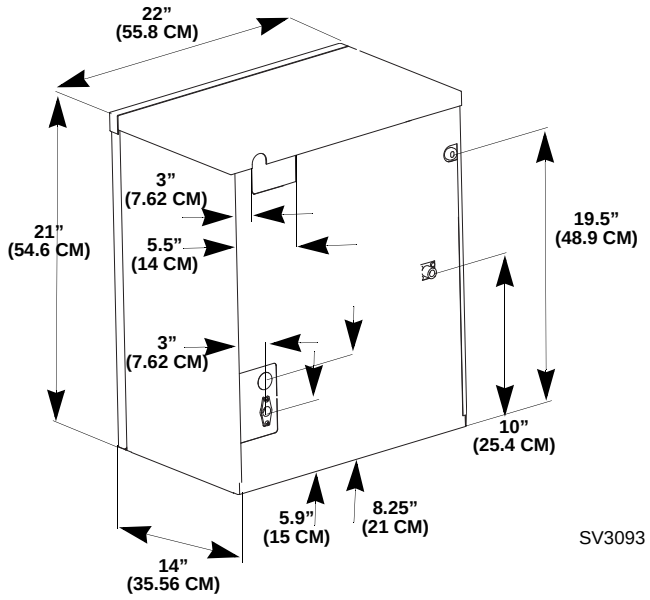


⚠ Warning

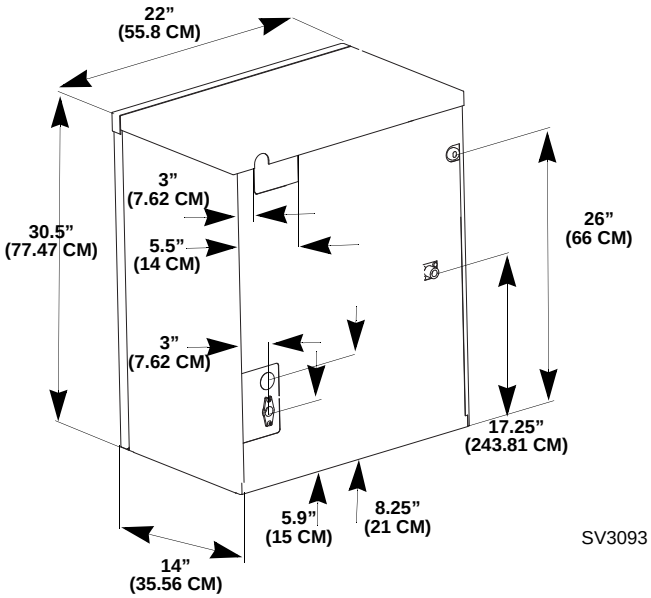
S1470C/S1870C/S2170C ice machines are not approved for use on Manitowoc B570 series bins.

Ice Machine Dimensions

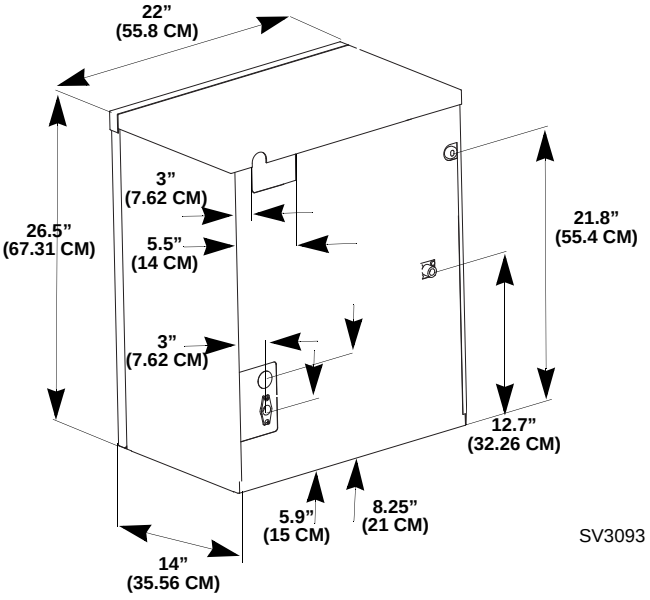
IB0600C ICE MACHINE



IB1000C ICE MACHINE



IB0800C ICE MACHINE

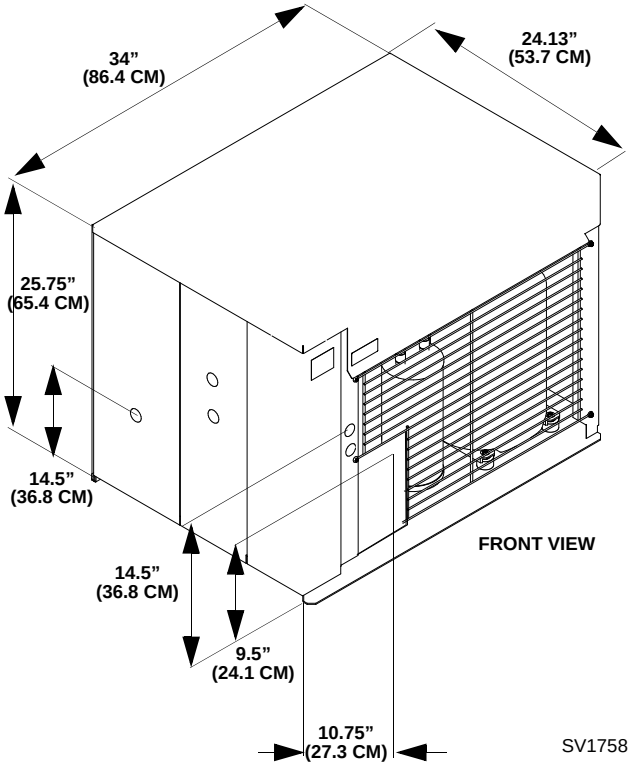


Important

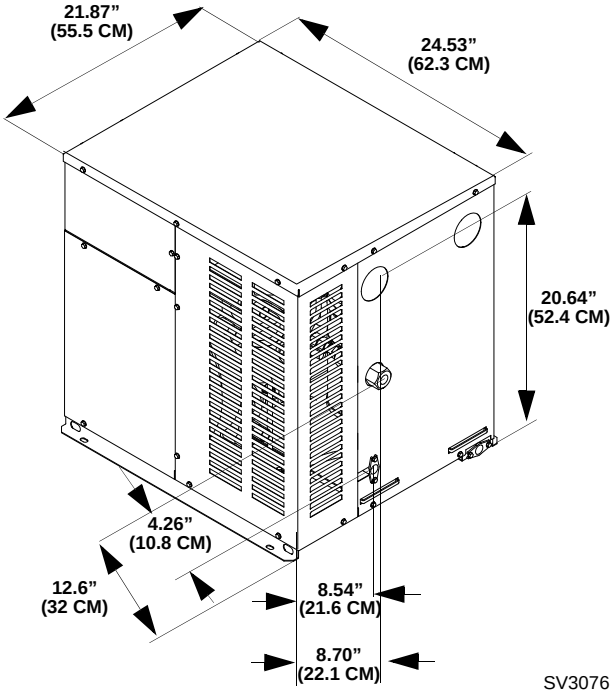
Failure to follow these installation guidelines may affect warranty coverage.

CVD Condensing Unit Dimensions

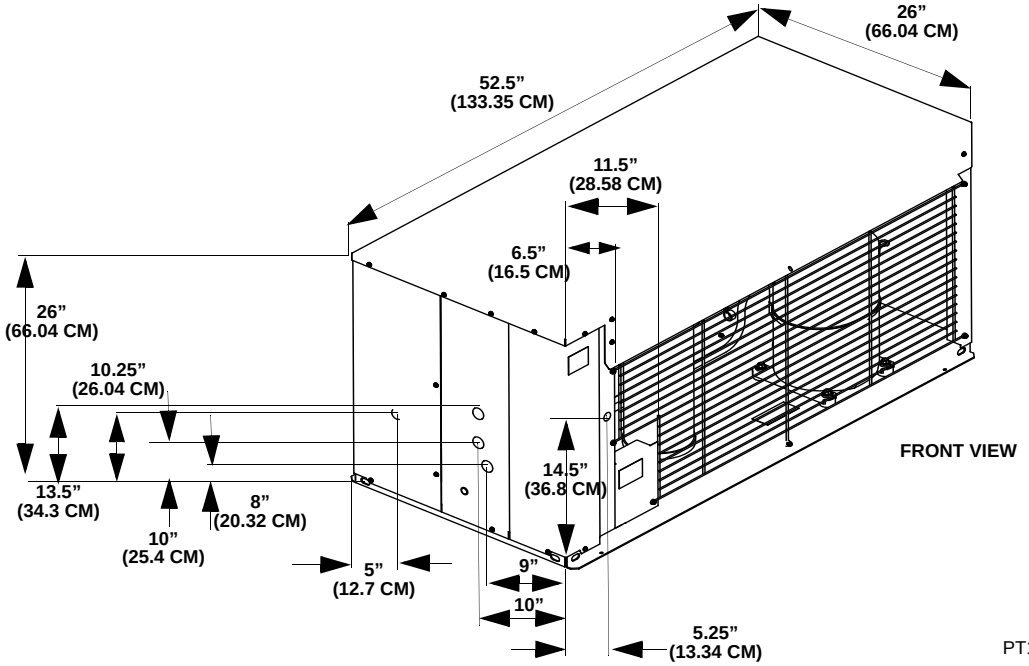
CVD0675/CVD0885/CVD1085/ CVD1185/CVD1285/CVD1485



CVD1486

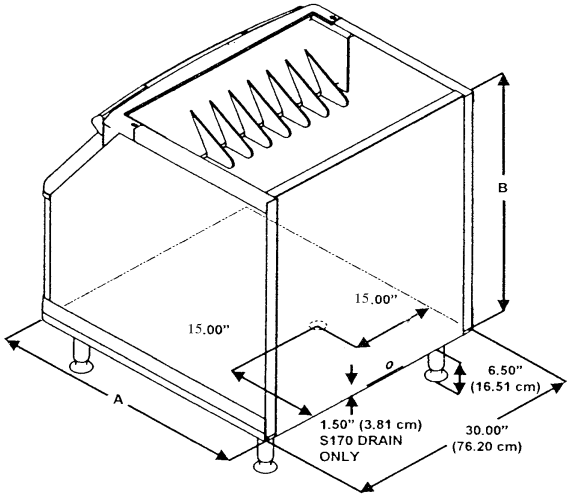


CVD1885/CVD2085 Air-Cooled



Ice Storage Bin Dimensions

30 INCH (76CM) ICE STORAGE BIN



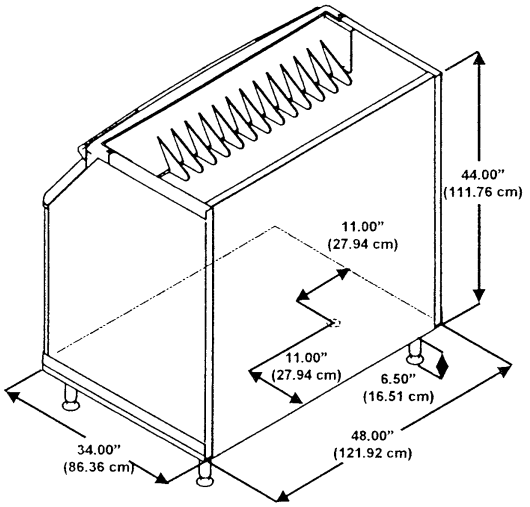
Bin Model	Dimension A	Dimension B
B570	34.0 in (86.3 cm)	44.0 in (111.7 cm)

⚠ Warning

Manitowoc QuietQube ice machines require the ice storage bin to incorporate an ice deflector.

Prior to using a non-Manitowoc ice storage system with other Manitowoc ice machines, contact the manufacturer to assure their ice deflector is compatible with Manitowoc ice machines.

S970 ICE STORAGE BIN

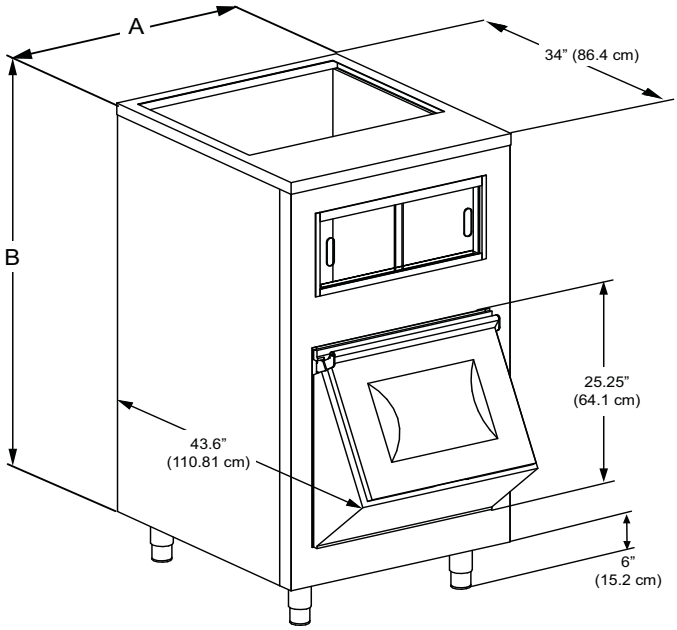


⚠ Caution

30" large capacity bins must be attached to the wall with the bracket provided with the bin.

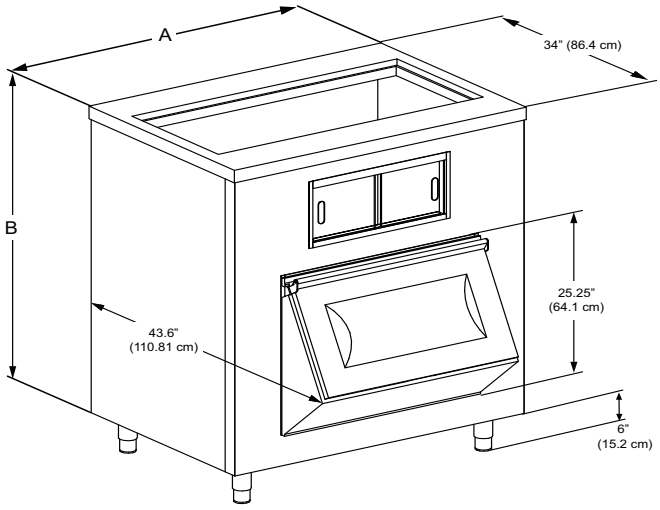
Large Capacity Ice Storage Bin Dimensions

30 INCH (76 CM)



Bin Model	Dimension A (Width)	Dimension B (Height)
B750	30 in. (76.2 cm.)	58 in. (147.3 cm.)
B1050	30 in. (76.2 cm.)	78 in. (198.1 cm.)
The bin drain is exactly in the center of the bin.		

48 INCH (122 CM) & 60 INCH (152 CM)



Bin Model	Dimension A (Width)	Dimension B (Height)
B1100	48 in. (121.9 cm.)	55.0 in. (139.7 cm.)
B1400	60 in. (152.4 cm.)	55.0 in. (139.7 cm.)
The bin drain is exactly in the center of the bin.		

General

These instructions are provided to assist the qualified installer. Check your local Yellow Pages for the name of the nearest Manitowoc distributor, or call Manitowoc Ice, Inc. for information regarding installation and start-up services.

Important

Failure to follow these installation guidelines may affect warranty coverage.

⚠ Warning

PERSONAL INJURY POTENTIAL

Remove all ice machine panels before lifting and installing.

Ice Machine Installation Options

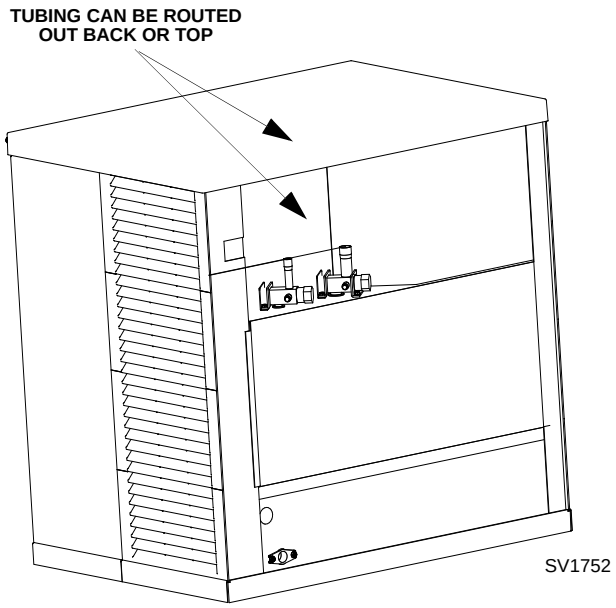
CVD1486 CONDENSER WATER PRESSURE

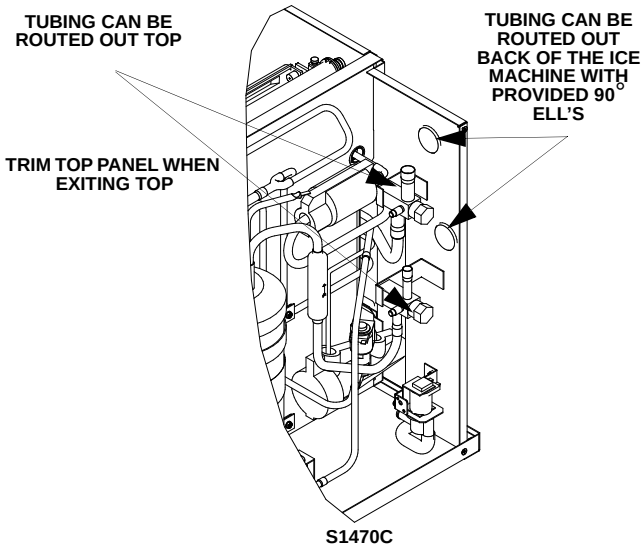
Water pressure at the condenser cannot exceed 150 psig (10.34 bar) with the standard water-regulating valve. Contact your distributor if your water pressure is greater than 150 psig (10.34 bar). A special order condensing unit is available that allows water pressure up to 350 psig (24.13 bar).

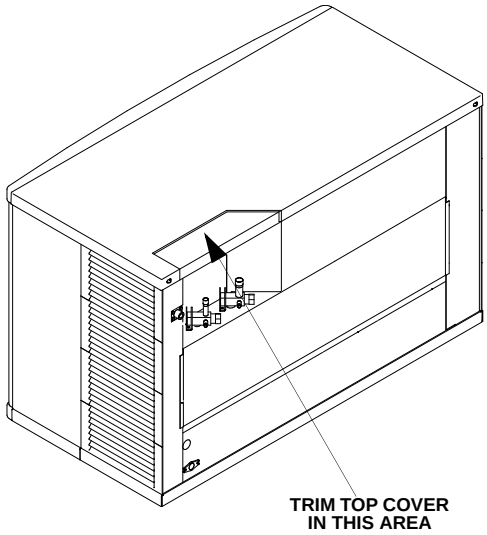
ICE MACHINE HEAD SECTIONS

The ice machine head can be installed with the electrical inlet, water supply inlet and refrigeration tubing entering from the back or top of the ice machine.

The ice machine water drain must exit the back of the ice machine.




TUBING CAN BE ROUTED OUT TOP
TUBING CAN BE ROUTED OUT BACK OF THE ICE MACHINE WITH PROVIDED 90° ELL'S
TRIM TOP PANEL WHEN EXITING TOP
S1470C



Cut the top cover for top routing of electrical inlet, water supply inlet or refrigeration lines.

1. Prior to cutting, mount top cover onto ice machine.
2. Use ice machine back panel recessed area as a template to mark the underside of the top cover. Do not cut up to or past this line!
3. Using an aviator snips, cut top cover as needed:
   A. Do not cut out entire area! Cut up to 1/8 inch to marked line.
   B. Cut out only what is needed. (If routing only refrigeration lines out the top, cut just enough to route these lines.)
   C. Do not cut out the entire corner area.

Ice Machine Head Section Installation Requirements

S600C/S850C/S1000C/S1200C/S1470C/S1870C/S2170C

The location selected for the ice machine must meet the following criteria. If any of these criteria are not met, select another location.

- The location must be free of airborne and other contaminants.
- The air temperature must be at least 35°F (1.6°C), but must not exceed 110°F (43.4°C).
- The location must not be near heat-generating equipment or in direct sunlight.
- The location must not obstruct airflow through or around the ice machine. Refer to ice machine head section clearance requirements.

IB0600C/IB0800C/IB1000C

- Ice/Beverage Ice Machines require the installation of a thermostat to maintain dispenser ice level. The thermostat ships with the ice machine.
- The ice machine head is installed with the electrical inlet, water supply inlet, refrigeration tubing and water drain entering from the back of the ice machine.
- The ice machine head section contains a service loop that must remain installed between the ice machine head section and line set. Sufficient tubing length must be available to allow 180° rotation of the ice machine.
- Maintain a 3” space between the back of the ice machine and the back of the dispenser to allow room for the refrigeration line set service loop.
- The water inlet and electrical connection must contain a service loop to allow future service and maintenance access.
- The drain line must contain a union or other suitable means of disconnection at the ice machine head section.
- The location must be free of airborne and other contaminants.
- The air temperature must be at least 35°F (1.6°C), but must not exceed 110°F (43.4°C).
- The location must not be near heat-generating equipment or in direct sunlight.
- The location must not obstruct airflow through or around the ice machine. Refer to ice machine head section clearance requirements.

Ice Machine Head Section Clearance Requirements

S600C/S850C/S1000C/S1200C/S1470C/S1870C/S2170C

Top 5” (12.7 cm) is recommended for efficient operation and removal of top cover/servicing.

Sides 5” (12.7 cm) is recommended for efficient operation and servicing. There is no minimum clearance required.

Back 3” (7.6 cm) required when routing electrical inlet, water inlet and refrigeration tubing out of the top of the unit.

5” (12.7 cm) required when routing all connections out the back.

IB0600C/IB0800C/IB1000C

Top 2” (5.1 cm) required clearance for cleaning procedures and servicing.

Back 5” (12.7 cm) required when routing all connections out the back.

Sides 8” (20.3 cm) required for servicing.

⚠ Caution

The ice machine head section must be protected if it will be subjected to temperatures below 32°F (0°C). Failure caused by exposure to freezing temperatures is not covered by the warranty. See “Removal from Service/Winterization”.

Location of CVD Condensing Unit

The location selected for the CVD Condensing Unit must meet the following criteria. If any of these criteria are not met, select another location.

- The air temperature must be at least -20°F (-28.9°C) but must not exceed 130°F (54.4°C).
- *CVD675/CVD1185/CVD2085 Only* - The air temperature must be at least -20°F (-28.9°C) but must not exceed 120°F (48.9°C).
- *CVD1486 Only*- The air temperature must be at least 50°F (10°C) but must not exceed 110°F (43°C).
- The location must not allow exhaust fan heat and/or grease to enter the condenser.
- The location must not obstruct airflow through or around the condensing unit. See below for clearance requirements.

Condensing Unit Clearance Requirements

CVD675/CVD885/CVD1085/CVD1185/CVD2085

Top/Sides

There is no minimum clearance required, although 6” (15.2 cm) is recommended for efficient operation and servicing only.

Front/Back

48” (122 cm)

CVD1285/CVD1485/CVD1885

Top/Sides

There is no minimum clearance required, although 6” (15.2 cm) is recommended for efficient operation and servicing only.

Front

24” (61 cm)

Back

48” (122 cm)

CVD1486 ONLY

Top - 5” (12.7 cm) is required for efficient operation and servicing.

Front/Back/Sides - 12” (30.5 cm)

Bin Installation

All ice machines installed on a bin require an ice deflector. Manitowoc bins have a built in deflector that requires no modifications when used with a forward facing evaporator. Ice machines with multiple evaporators require a deflector kit.

Bin adapters or custom bin tops are available to allow installation of a 30” ice machine on a 48” or 60” bin. Refer to ice machine price list for options.

⚠ Warning

Manitowoc QuietQube ice machines require the ice storage bin to incorporate an ice deflector.

Prior to using a non-Manitowoc ice storage system with other Manitowoc ice machines, contact the manufacturer to assure their ice deflector is compatible with Manitowoc ice machines.

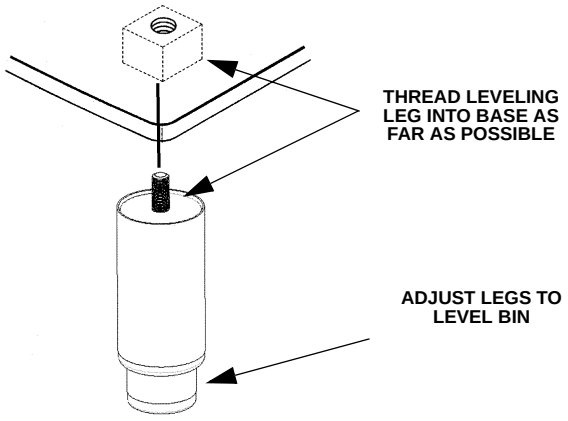
LEVELING THE ICE STORAGE BIN

1. Screw the leveling legs onto the bottom of the bin.
2. Screw the foot of each leg in as far as possible.

⚠ Caution

The legs must be screwed in tightly to prevent them from bending.

3. Move the bin into its final position.
4. Level the bin to assure that the bin door closes and seals properly. Use a level on top of the bin. Turn each foot as necessary to level the bin.



Leveling Leg and Foot

S1470C/S1870C/S2170C INSTALLATION ON A MANITOWOC BIN

⚠ Warning

S1470C/S1870C/S2170C ice machines are not approved for use on Manitowoc S570 series bins.

An ice deflector kit is required for installation. Order appropriate kit (30” or 48”) for your bin.

Step 1 Remove the stock ice deflector.

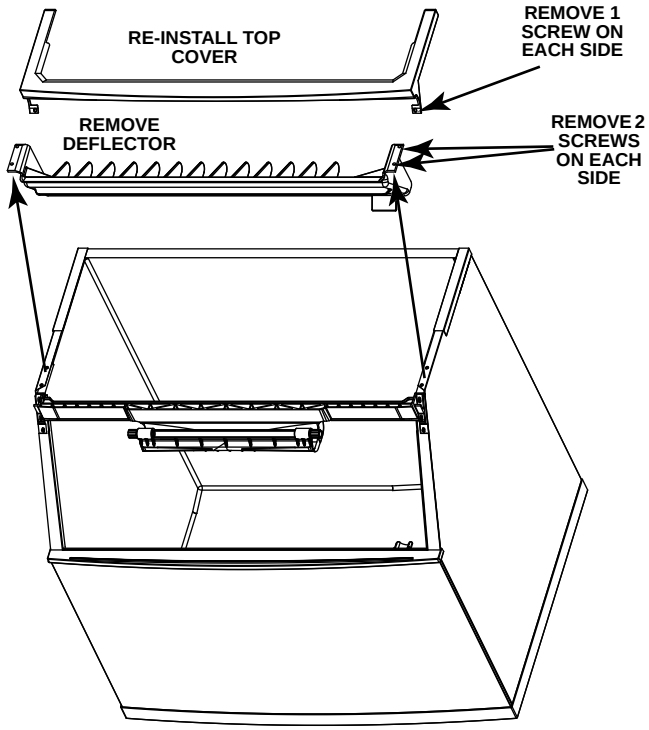
A. Remove the left and right side cover screws

B. Remove the cover to expose four screws, which secure the plastic deflector.

C. Remove fours screws and plastic deflector

D. Install polymer spacer on each side and secure with the four screws.

E. Reinstall cover and screws.



Step 2 Install front support and filler panels.

A. Remove foam tape from front support location.

B. Set front support in place and install foam tape.

C. Position filler panels (align with front support), drill and secure.

D. Install foam tape on front and back. Seal all foam tape edges.

Step 3 Install ice deflector.

A. Locate center of ice machine drop zone (center is 11” from left edge of ice machine to left edge of bracket).

B. Cut and remove foam tape on the front and the back of the bin where the deflector will be located.

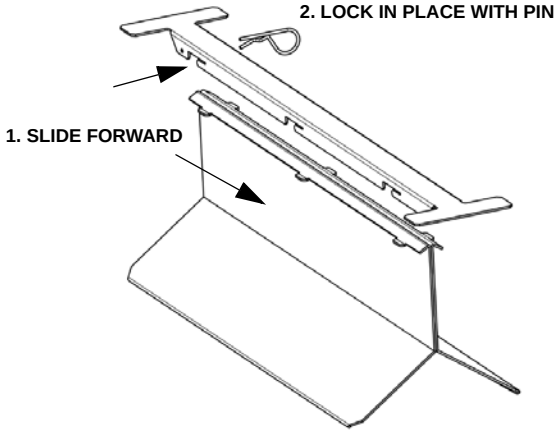
C. Remove any residual adhesive; areas must be clean and dry.

D. Remove protective covering from double sided tape on bottom of deflector bracket.

E. Install deflector bracket; Distribute equally to the front and back and locate pin to the rear.

F. Apply foam tape over bracket and seal joints with silicone sealant.

G. Refer to illustration and install deflector in mounting bracket.



Dispenser Installation

No deflector is needed for machines that match the size of the dispenser (30” head section on a 30” dispenser) unless required by the dispenser manufacturer. Adapters are required when a smaller ice machine is going on a larger dispenser (22” machine on a 30” dispenser).

IB0600C/IB0800C/IB1000C

Securing the Ice Machine to the Dispenser

Important

Manitowoc Ice/Beverage Ice Machines require an adapter for mounting. Adapters are not included with the ice machine, dispenser or bin and must be ordered separately. When a non-Manitowoc adapter is used, verify the adapter is compatible with Manitowoc Ice/Beverage Ice Machines prior to installation.

The ice machine and adapter plate must be secured to the dispenser to prevent tipping.

- Two holes are located in the front bottom rail of the ice machine, to allow attachment to the adapter plate.
- The adapter cover must be secured to the dispenser to prevent ice from dislodging the cover during agitation.

⚠ Warning

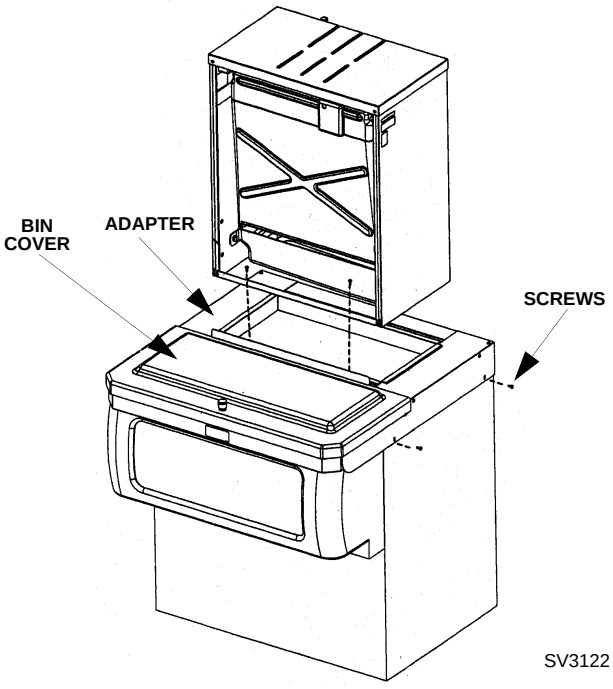
The ice machine and adapter plate must be secured to the dispenser to prevent tipping.

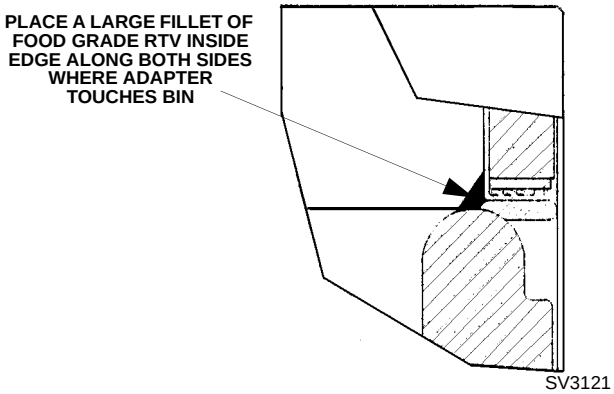
TYPICAL ICE BEVERAGE ON A DISPENSER

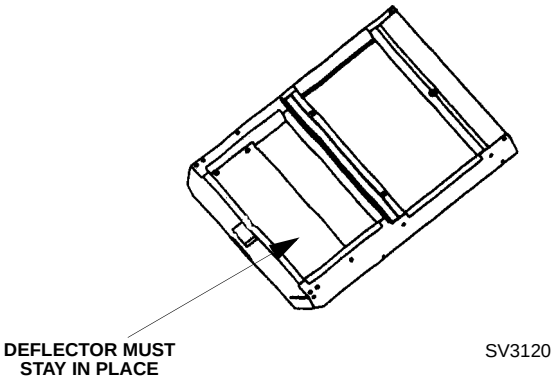
Important

DO NOT REMOVE the label on bin adapters. The retainer clips and brackets must be used.

1. Install bin level thermostat bracket.
2. Set adapter on dispenser. Position the adapter so that the front flange of the adapter will be up against the front lip of the dispenser. Adapter may have to be moved towards the back of the dispenser.
3. Using the slotted holes in the adapter as a template, drill four (4) 9/64” diameter holes at the bottom of the slots. Note: Do not drill deeper than 1/4” past the sheet metal. Use a drill stop!
4. Fasten the adaptor to dispenser using the four (4) #8 screws supplied with the adaptor kit.
5. Set the ice machine on top of the adapter. Align holes in ice machine front angle with threaded bosses on the adapter.
6. Secure the ice machine to the adaptor with two (2) #8-32 screws supplied with the kit.
7. Set the bin cover on the adapter, move backwards until the cover hits the stop, and lower the plastic cover insuring that the latch locks.
8. To remove the bin cover, twist the knob, lift up, and pull forward.







Electrical Service

GENERAL

⚠ Warning

All wiring must conform to local, state and national codes.

VOLTAGE

For both the Ice Machine Head Section and the CVD® Condensing Unit, the maximum allowable voltage variation is ±10% of the rated voltage at ice machine start-up (when the electrical load is highest).

⚠ Warning

The ice machine and condensing unit must be grounded in accordance with national and local electrical codes.

All electrical work, including wire routing and grounding, must conform to local, state and national electrical codes. The following precautions must be observed:

- The ice machine must be grounded.
- A separate fuse/circuit breaker must be provided for each condensing unit.
- A qualified electrician must determine proper wire size dependent upon location, materials used and length of run (minimum circuit ampacity can be used to help select the wire size).
- The maximum allowable voltage variation is +/-10 of the rated voltage at ice machine start-up (when the electrical load is highest).
- Check all green ground screws in the control box and verify they are tight before starting the ice machine.

Important

Observe correct polarity of incoming line voltage.

Incorrect polarity can lead to erratic ice machine operation and a safety issue. This is especially critical on 230 volt / 50 cycle ice machines.

FUSE/CIRCUIT BREAKER

The ice machine head section and condensing unit are wired independently from each other.

Ice Machine Head Section

The ice machine head section does not require a dedicated circuit breaker.

CVD® Condensing Unit

A separate fuse/circuit breaker must be provided for each condensing unit. Circuit breakers must be H.A.C.R. rated (does not apply in Canada).

MINIMUM CIRCUIT AMPACITY

The minimum circuit ampacity is used to help select the wire size of the electrical supply. (Minimum circuit ampacity is not the ice machine's running amp load.) The wire size (or gauge) is also dependent upon location, materials used, length of run, etc., so it must be determined by a qualified electrician. Manitowoc Ice requires minimum #8 AWG for S2170C condensing unit applications.

GROUND FAULT CIRCUIT INTERRUPTER

Ground Fault Circuit Interrupter (GFCI/GFI) protection is a system that shuts down the electric circuit (opens it) when it senses an unexpected loss of power, presumably to ground. Manitowoc Ice, Inc. does not recommend the use of a GFCI/GFI circuit protection with our equipment. If code requires the use of a GFCI/GFI then you must follow the local code. The circuit must be dedicated, sized properly and there must be a panel GFCI/GFI breaker. We do not recommend GFCI/GFI outlets as they are known for more intermittent nuisance trips than panel breakers.

Electrical Requirements

QuietQube® Ice Machine Head Section

Important

Due to continuous improvements, this information is for reference only. Please refer to the ice machine serial number tag to verify electrical data. Serial tag information overrides information listed on this page.

Local or state electrical code, length of wire run or materials used, can increase the minimum wire or breaker size requirement. A qualified electrician must determine the wire and breaker size, although the minimum wire size must meet or exceed the specifications in these charts.

Ice Machine	Voltage Phase Cycle	Maximum Fuse/Circuit Breaker	Total Amps	**Minimum Wire Size Required by Manitowoc	Minimum Breaker Size Required by Manitowoc
S0600C	115/1/60 230/1/50	15 amp 15 amp	1.1 0.6	#14 Solid Copper Conductor	15 amp 15 amp
S0850C	115/1/60 230/1/50	15 amp 15 amp	1.1 1.5	#14 Solid Copper Conductor	15 amp 15 amp
IB0620C **IB0820C** **IB1020C**	115/1/60 230/1/50	15 amp 15 amp	1.4 0.8	#14 Solid Copper Conductor	15 amp 15 amp
S1000C	115/1/60 230/1/50	15 amp 15 amp	2.5 1.5	#14 Solid Copper Conductor	15 amp 15 amp
S1200C	115/1/60 230/1/50	15 amp 15 amp	2.5 1.5	#14 Solid Copper Conductor	15 amp 15 amp
S1470C **S1870C** **S2170C**	115/1/60 208-230/1/60 230/1/50*	15 amp 15 amp 15 amp	1.1 0.6 0.6	#14 Solid Copper Conductor	15 amp 15 amp 15 amp

*** Not available on S2170C models.**

**** All conductors must be solid copper wire**

CVD® Condensing Unit

Important

Due to continuous improvements, this information is for reference only. Please refer to the condensing unit serial number tag to verify electrical data. Serial tag information overrides information listed on this page.

⚠ Warning

CVD2085 ONLY

Connect power supply wiring directly to L1 & L2 on the contactor. Torque screws to the torque value specification on the contactor label. Follow all local, state and national electrical codes.

Local or state electrical code, length of wire run or materials used, can increase the minimum wire or breaker size requirement. A qualified electrician must determine the wire and breaker size, although the minimum wire size must meet or exceed the specifications in these charts.

Condensing Unit	Voltage/Phase/Cycle	Maximum Fuse/ Circuit Breaker	Minimum Circuit Amps	**Minimum Wire Size Required by Manitowoc
CVD0675	208-230/1/60	15 amp	9.6	#14 Solid Copper Conductor
	208-230/3/60	15 amp	7.3	#14 Solid Copper Conductor
	230/1/50	15 amp	9.0	#14 Solid Copper Conductor
CVD0885	208-230/1/60	20 amp	11.8	#12 Solid Copper Conductor
	208-230/3/60	15 amp	9.1	#14 Solid Copper Conductor
	230/1/50	20 amp	10.0	#12 Solid Copper Conductor
CVD1085	208-230/1/60	20 amp	12.5	#12 Solid Copper Conductor
	208-230/3/60	15 amp	9.4	#14 Solid Copper Conductor
	230/1/50	20 amp	10.9	#12 Solid Copper Conductor
CVD1185	208-230/1/60	25 amp	15.7	#10 Solid Copper Conductor
	208-230/3/60	15 amp	10.8	#14 Solid Copper Conductor
	230/1/50	20 amp	11.2	#12 Solid Copper Conductor
CVD1285	208-230/1/60	25 amp	14.7	#10 Solid Copper Conductor
	208-230/3/60	20 amp	10.6	#12 Solid Copper Conductor
	230/1/50	20 amp	11.7	#12 Solid Copper Conductor
CVD1485	208-230/1/60	20 amp	20.0	#12 Solid Copper Conductor
	208-230/3/60	15 amp	15.0	#14 Solid Copper Conductor
	230/1/50	30 amp	20.0	#10 Solid Copper Conductor
CVD1486	208-230/1/60	20 amp	20.0	#12 Solid Copper Conductor
	208-230/3/60	15 amp	15.0	#14 Solid Copper Conductor
	230/1/50	20 amp	20.0	#14 Solid Copper Conductor
CVD1885	208-230/1/60	40 amp	25.0	#8 Solid Copper Conductor
	208-230/3/60	25 amp	20.0	#10 Solid Copper Conductor
	230/1/50	30 amp	20.0	#40 Solid Copper Conductor
CVD2085	208-230/1/60	50 amp	40.0	#6 Solid Copper Conductor
	208-230/3/60	40 amp	30.0	#8 Solid Copper Conductor

NOTE: The QuietQube® Ice Machine Head Section and CVD Condensing Unit are wired independently from each other.

QuietQube® Ice Machine Head Section Electrical Wiring Connections

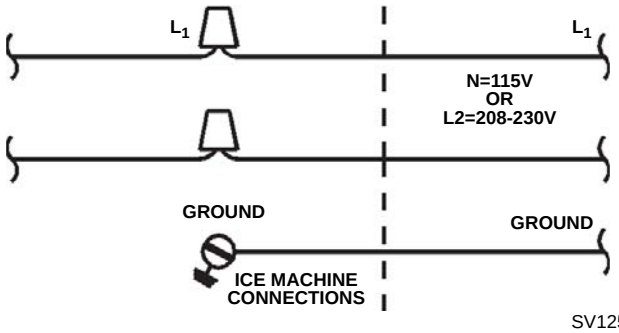
⚠ Warning

These diagrams are not intended to show proper wire routing, wire sizing, disconnects, etc., only the correct wire connections.

All electrical work, including wire routing and grounding, must conform to local, state and national electrical codes.

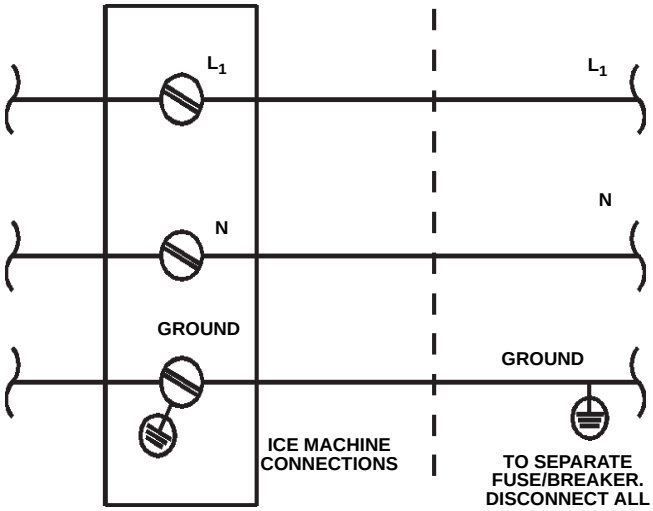
Though wire nuts are shown in the drawings, the ice machine field wiring connections may use either wire nuts or screw terminals.

QUIETQUBE® ICE MACHINE HEAD SECTION 115/1/60



SV1258

QUIETQUBE® ICE MACHINE HEAD SECTION 230/1/50



SV1191

FOR UNITED KINGDOM ONLY

As the colors of the wires in the mains lead of the appliance may not correspond with the colored markings identifying the terminals in your plug, proceed as follows:

- The wire which is colored green and yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth ground symbol ⏚ or colored green or green and yellow.
- The wire colored blue must be connected to the terminal which is marked with the letter N or colored black.
- The wire colored brown must be connected to the terminal which is marked with the letter L or colored red.

Condensing Unit Wiring Connections

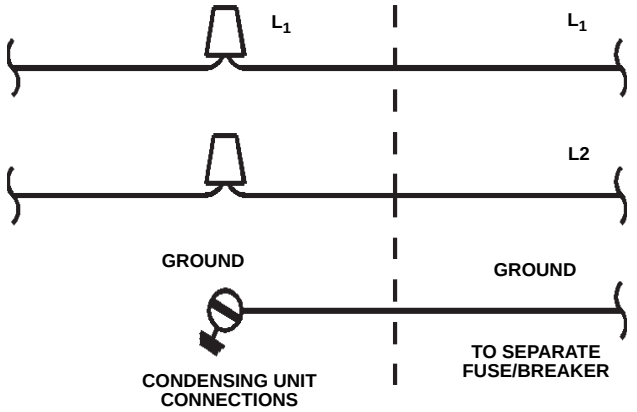
⚠ Warning

These diagrams are not intended to show proper wire routing, wire sizing, disconnects, etc., only the correct wire connections.

All electrical work, including wire routing and grounding, must conform to local, state and national electrical codes.

Though wire nuts are shown in the drawings, the ice machine field wiring connections may use either wire nuts or screw terminals.

CVD CONDENSING UNIT 208-230/1/60



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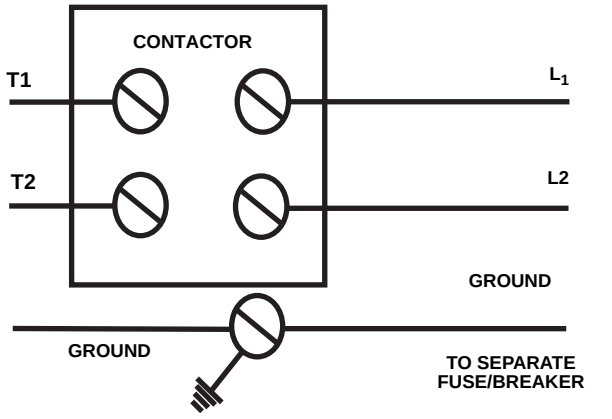
CVD2085 ONLY CONDENSING UNIT CONNECTIONS



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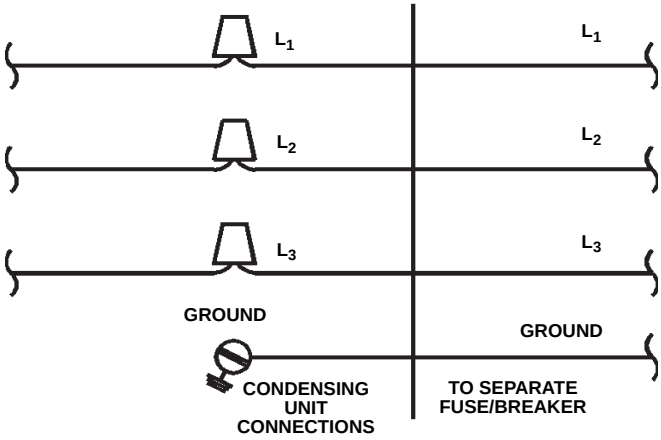
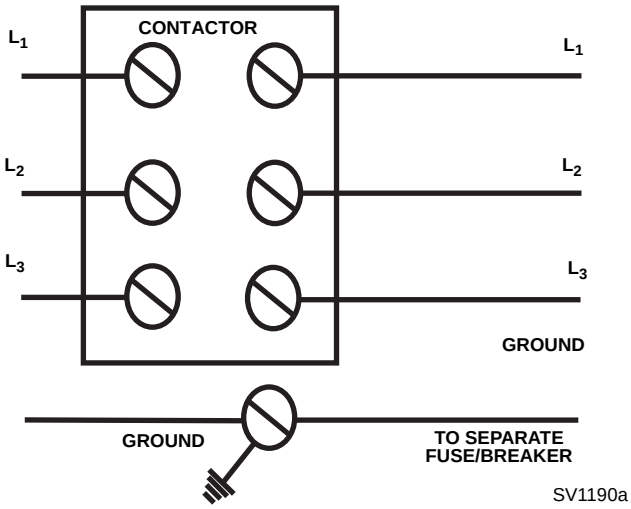
CVD CONDENSING UNIT 208-230/3/60



CVD2085 ONLY CONDENSING UNIT CONNECTIONS



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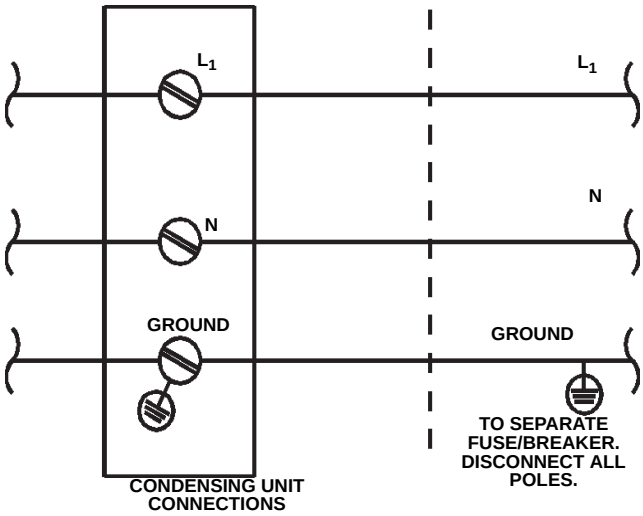
CVD CONDENSING UNIT 230/1/50



Ice Machine Head Section Water Supply and Drains

POTABLE WATER SUPPLY

Local water conditions may require treatment of the water to inhibit scale formation, filter sediment, and remove chlorine odor and taste.

Important

If you are installing a Manitowoc water filter system, refer to the Installation Instructions supplied with the filter system for ice making water inlet connections.

POTABLE WATER INLET LINES

Follow these guidelines to install water inlet lines:

- Do not connect the ice machine to a hot water supply. Be sure all hot water restrictors installed for other equipment are working. (Check valves on sink faucets, dishwashers, etc.)
- If water pressure exceeds the maximum recommended pressure of 80 psig (5.52 bar), obtain a water pressure regulator from your Manitowoc distributor.
- Install a water shut-off valve for ice making potable water.
- Insulate water inlet lines to prevent condensation.
- A 3’ service loop or disconnect (union) must be installed at the ice machine head section.

DRAIN CONNECTIONS

Follow these guidelines when installing drain lines to prevent drain water from flowing back into the ice machine and storage bin:

- Drain lines must have a 1.5 inch drop per 5 feet of run (2.5 cm per meter), and must not create traps.
- The floor drain must be large enough to accommodate drainage from all drains.
- Run separate bin and ice machine drain lines. Insulate them to prevent condensation.
- Vent the bin and ice machine drain to the atmosphere. The ice machine drain requires an 18” vent.
- Drains must have a union or other suitable means to allow in place disconnection from the ice machine when servicing is required.

Cooling Tower Applications (Water-Cooled Models)

A water cooling tower installation does not require modification of the ice machine. The water regulator valve for the condenser continues to control the refrigeration discharge pressure.

It is necessary to know the amount of heat rejection, and the pressure drop through the condenser and water valves (inlet and outlet) when using a cooling tower on an ice machine.

- Water entering the condenser must not exceed 90°F (32.2°C).
- Water flow through the condenser must not exceed 5 gallons (19 liters) per minute.
- Allow for a pressure drop of 7 psi (48 kPA) between the condenser water inlet and the outlet of the ice machine.
- Water exiting the condenser must not exceed 110°F (43.3°C).

IMPORTANT

The Commonwealth of Massachusetts requires that all water-cooled models must be connected only to a closed loop, cooling tower system.

Water Cooled Condenser Water Supply and Drains

CONDENSER WATER SUPPLY

Local water conditions may require treatment of the water to inhibit scale formation, filter sediment, and remove chlorine odor and taste.

WATER COOLED CONDENSER LINES

Follow these guidelines to install water lines:

- Contact your distributor if your water pressure is greater than 150 psig (1034 kPA). A special order condensing unit is available that allows water pressure up to 350 psig (2413 kPA).
- Install a shutoff valve (inlet and outlet on cooling tower or closed loop circuits) to allow isolation of the water system.
- Water entering the condenser must not exceed 90°F (32.2°C).
- Water flow through the condenser must not exceed 5 gallons (19 liters) per minute.
- Allow for a pressure drop of 8 psig (55 kPA) between the condenser water inlet and outlet.
- Water exiting the condenser must not exceed 110°F (43.3°C).
- Do not connect to the potable water filter system.

CONDENSING UNIT DRAIN CONNECTIONS

The condensing unit drain is provided to remove any condensate produced by the suction accumulator. Condensate amounts will vary depending on temperature and humidity.

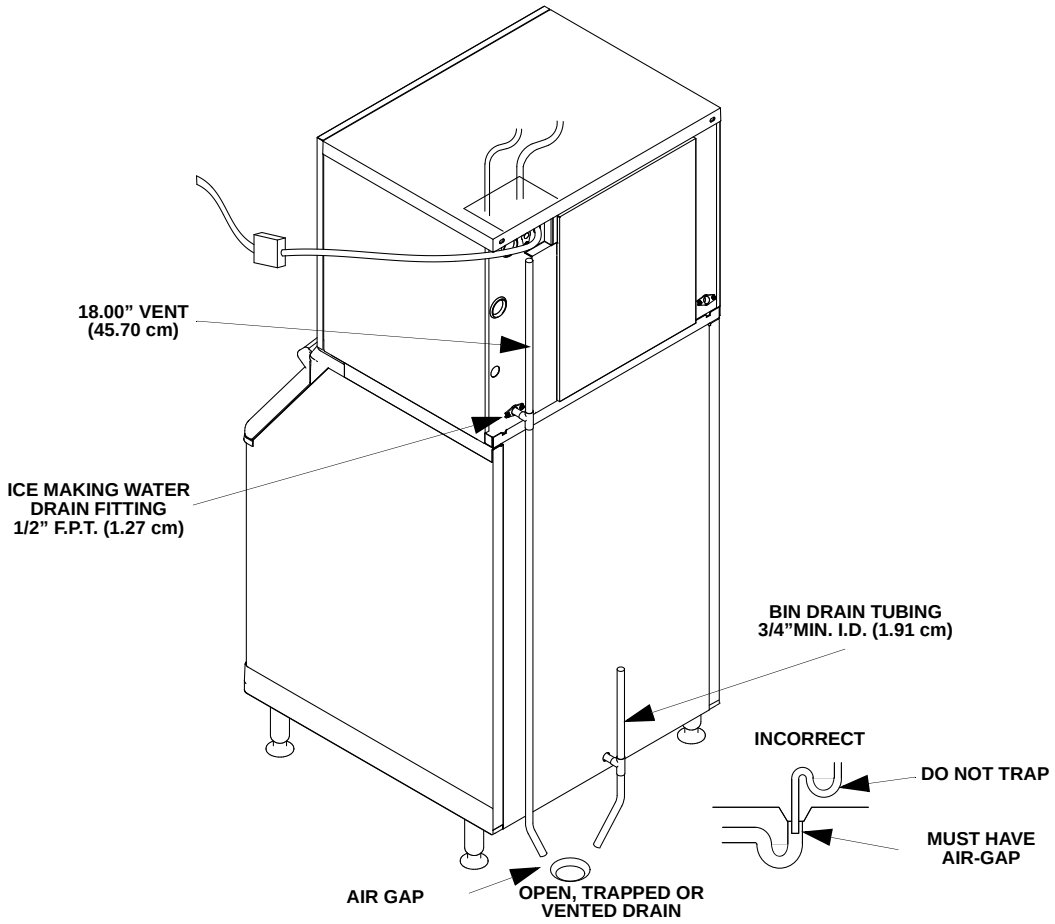
- The condensing unit must be level front to back and side to side to allow the condensate to drain.
- Drain lines must have a 1.5-inch drop per 5 feet of run (2.5 cm per meter), and must not create traps.
- Drain termination must meet applicable costs.

WATER SUPPLY AND DRAIN LINE SIZING/CONNECTIONS

⚠ Caution
Plumbing must conform to state and local codes.

Location	Water Temperature	Water Pressure	Ice Machine Fitting	Tubing Size Up to Ice Machine Fitting
Ice Making Water Inlet	35°F (1.6°C) Min. 90°F (32.2°C) Max.	20 psi (1.4 bar) Min. 80 psi (5.5 bar) Max.	3/8" Female Pipe Thread	3/8" (9.5 mm) min. inside diameter
Water Cooled Condenser	35°F (1.6°C) Min. 90°F (32.2°C) Max.	**Standard** 20 psi (1.4 bar) Min. 150 psi (10.3 bar) Max. **High Pressure Option** 20 psi (1.4 bar) Min. 350 psi (24.1 bar) Max.	1/2" Female Pipe Thread	1/2" (12.7 mm) min. inside diameter
Ice Making Water Drain	---	---	1/2" Female Pipe Thread	1/2" (12.7 mm) min. inside diameter
Bin Drain	---	---	3/4" Female Pipe Thread	3/4" (19.1 mm) min. inside diameter
Large Capacity Bin Drain	---	---	1" Female Pipe Thread	1" (25.4 mm) min. inside diameter

Refer to "Ice Machine Dimensions" at the beginning of Section 2 for the exact locations of inlets and drains for the model you are working on.



Typical Water Supply Drain Installation

Refrigeration System Installation

QuietQube® Ice Machine	Remote Single Circuit Condenser	Line Set*
S0600C IB620C	CVD675	RC-21 RC-31 RC-51
S0850C IB820C	CVD885	
S1000C	CVD1085	
IB1020C	CVD1185	RC-20 RC-30 RC-50
S1200C	CVD1285	
S1470C	CVD1485 CVD1486	
S1870C	CVD1885	
S2170C	CVD2085	RC-23 RC-33 RC-53

*Line Set	Suction Line	Liquid Line	Insulation Thickness
RC 21/31/51	5/8 inch (15.9 mm)	3/8 inch (9.5 mm)	1/2”(13mm) Suction Line 1/4” (7mm) Liquid Line
RC 20/30/50	3/4 inch (19.1 mm)	1/2 inch (12.7 mm)	1/2”(13mm) Suction Line 1/4” (7mm) Liquid Line
RC 23/33/53	3/4 inch (19.1 mm)	5/8 inch (15.9 mm)	1/2”(13mm) Suction Line 1/4” (7mm) Liquid Line

Important

Manitowoc remote systems are only approved and warranted as a complete new package. Warranty on the refrigeration system will be void if a new ice machine head section is connected to pre-existing (used) tubing or condensing units or vice versa.

USAGE WITH NON-MANITOWOC CONDENSING UNITS

Manitowoc CVD® Condensing Units are specifically designed for usage with a QuietQube® Ice Machine Head Section. Standard condensing units and Non-Manitowoc condensing units will not operate a QuietQube® Ice Machine Head Section.

⚠ Caution

The refrigeration system warranty will not apply if the Manitowoc Ice Machine and Manitowoc CVD Condensing Unit are not installed according to specifications. This warranty also will not apply if the refrigeration system is modified with a condenser, heat reclaim device, or other parts or assemblies not manufactured by Manitowoc Ice, Inc.

Factory Equipment Refrigeration Amounts

ICE MACHINE HEAD SECTION

Each ice machine head section ships from the factory with a R-404A refrigerant charge appropriate for the entire system operation. The serial tag on the ice machine indicates the refrigerant charge. The refrigerant charge is sufficient to operate the ice machine in ambient temperatures between -20°F & 130°F (-29°C & 54°C)*. With line set lengths of up to 100 feet (30.5 m).

***CVD675/CVD2085** = -20°F to 120°F (-29°C to 49°C)

CVD1486 = 50°F to 110°F (10°C to 43°C)

⚠ Warning

Potential Personal Injury Situation

The ice machine head section contains the refrigerant charge. Installation and brazing of the line sets must be performed by a properly trained and EPA certified refrigeration technician aware of the **dangers of dealing with refrigerant** charged equipment.

⚠ Caution

Never add more than nameplate charge to the refrigeration system for any application.

CVD® CONDENSING UNIT

Each condensing unit ships from the factory pressurized with 50/50 nitrogen helium mixture that must be removed during the installation process (approximately 20 psig).

REFRIGERATION LINE SETS/TRAP KIT

Refrigeration Rated Tubing and Trap Kits are shipped capped with atmospheric pressure.

⚠ Warning

Installation of a QuietQube® Condensing Unit may require the use of special equipment for placement. Trained and qualified personnel are required for proper rigging and lifting. Holes are provided on the corners of the condensing unit to allow the use of lifting shackles.

Refrigeration Line Set Installation

GENERAL

Refrigeration line set installations consist of vertical and horizontal line set distances between the ice machine and the condensing unit. The following guidelines, drawings and calculation methods must be followed to assure proper oil return and CVD® condensing unit/ice machine operation.

The refrigeration line set installer must be USA Government-Environmental Protection Agency (EPA) certified in proper refrigerant handling and servicing procedures.

⚠ Warning

The ice machine head section contains refrigerant charge. The ice machine head section contains three (3) refrigeration valves that **must remain closed** until proper installation of the line sets is completed.

⚠ Warning

Disconnect electrical power to the ice machine head section and CVD® condensing unit before proceeding.

Step 1 Verify Ice Machine and CVD® Condensing Unit Locations Are Within Guidelines.

Prior to installation of the ice machine head section and CVD® condensing unit be sure that the distance between then is within the line set routing guidelines outlined in this manual.

Roof/Wall Penetration

If required, cut a 3-inch (76.2 mm) circular hole in the wall or roof for routing of refrigeration tubing. A qualified person must perform all roof penetrations.

Step 2 Route Refrigeration Tubing

Properly route refrigeration tubing between the ice machine head section and the CVD® condensing unit.

A. LINE SET LENGTH

100 feet (30.5 m) Length: The maximum measured length the line set can be.

The receiver is designed to hold a charge sufficient to operate the ice machine in ambient temperatures between -20°F (-28.9°C) and 130°F (54.4°C)*, with line set lengths of up to 100 feet (30.5 m).

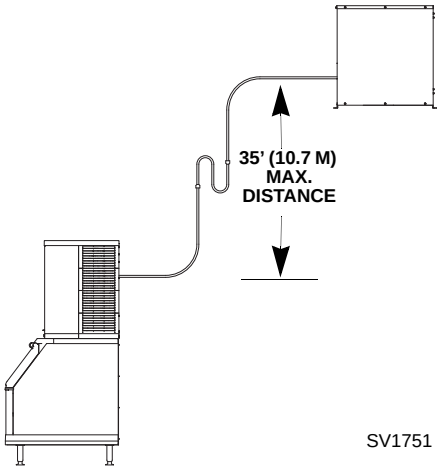
***CVD675/CVD1185/CVD2085** =
-20°F to 120°F (-29°C to 49°C)

CVD1486 = 50°F to 110°F (10°C to 43°C). The maximum amount of lineset which can be exposed on the rooftop is 25% of the total length of the lineset.

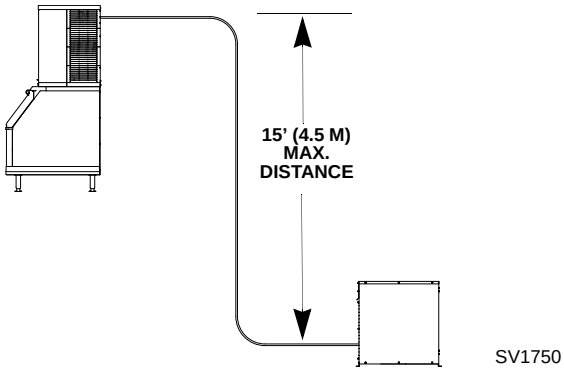
Important

QuietQube® ice machines will not function with line sets greater than 100 feet (30.5 m). Do not attempt to go beyond this distance and add refrigerant charge to compensate!

B. LINE SET RISE OR DROP



35 feet (10.7 m) Rise: The maximum distance the CVD® condensing unit can be above the ice machine.



15 feet (4.5 m) Drop: The maximum distance the CVD® condensing unit can be below the ice machine.

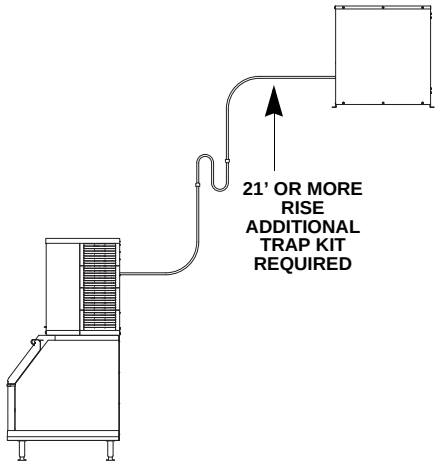
C. SUCTION LINE OIL TRAPS

⚠ Caution

Do not form unwanted traps in refrigeration lines. Never coil excess refrigeration tubing.

0 to 20 feet (0 to 6.1 m) Rise: The ice machine head section has one oil trap built in which allows for a maximum condenser rise of 20 feet (6.1 m) without additional traps in the suction line.

21 to 35 feet (6.4 to 10.7 m) Rise: The suction line requires an additional Oil Trap ("S" type) to be installed. Install the trap as close as possible to midpoint between the ice machine head section and CVD condensing unit. S-Trap Kits are available from Manitowoc (refer to chart).



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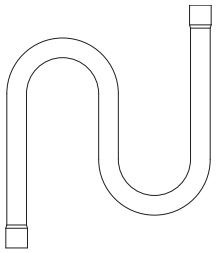


SV1760

Manitowoc S-Trap Kit

Model	S-Trap Kit Number	Tubing Size
S600C S850C S1000C	K00172	5/8 inch (15.9 mm)
S1200C S1470C S1870C S2170C	K00166	3/4 inch (19.1 mm)

Service Loop

A service loop in the line set permits easy access to the ice machine for cleaning and service.

- **The supplied service loop (on Ice Beverage ice machines) is an installation requirement. Excess tubing length must be sufficient to allow 180° rotation of the ice machine.**
- A service loop is not considered an oil trap.
- The service loop is not included when calculating length, rise or drop of the tubing run.
- Do not use hard rigid copper for the service loop.

⚠ Caution

If a line set has a rise followed by a drop, another rise cannot be made. Likewise, if a line set has a drop followed by a rise, another drop cannot be made.

Step 3 Lengthening or Reducing Line Set Lengths

⚠ Caution

Do not form unwanted traps in refrigeration lines. Never coil excess refrigeration tubing.

When the line set required shortening or lengthening, do so before connecting the line set to the ice machine head section or the CVD condensing unit.

Step 4 Connecting the line set.

To prevent oxidation of the copper, purge line set and condensing unit with dry nitrogen while brazing.

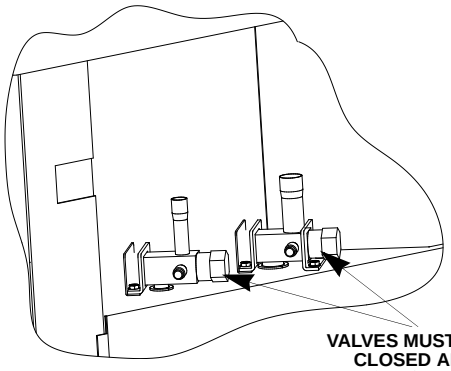
Connect The Line Set To The Ice Machine Head Section

> **⚠ Warning**
> The ice machine head section contains refrigerant charge. The ice machine head section contains three (3) refrigeration valves that **must remain closed** until proper installation of the line sets is completed.

The line set can be routed for entry through the top or rear of the ice machine head section.

- Top routing requires the cover to be trimmed.
- Rear routing requires the use of the supplied 90° elbows.

The line set shut off valves at the back of the ice machine must remain closed and be protected from heat during the brazing process. Wrap the valves in a wet rag or other type of heat sink prior to brazing. Cool braze joint with water immediately after brazing to prevent heat migration to the valve.



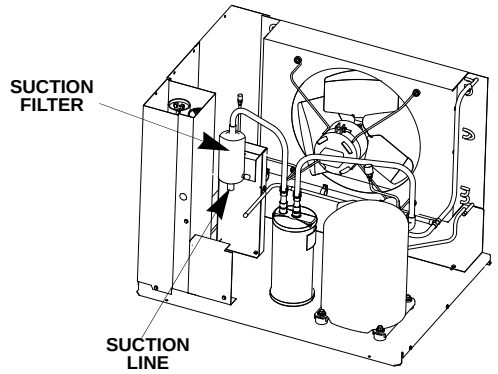
> **⚠ Warning**
> The condensing unit ships from the factory pressurized with a 50/50 mixture of nitrogen/helium. Bleed off pressure from both suction and liquid line access ports prior to cutting into refrigeration lines.

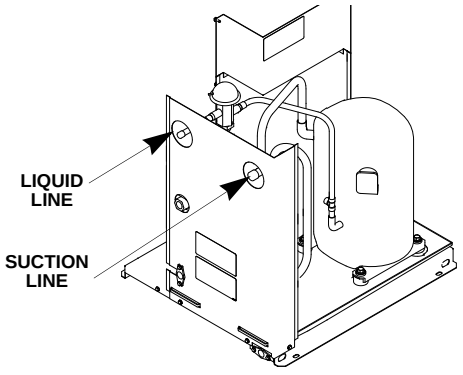
Connect The Line Set To The CVD Condensing Unit

> **⚠ Warning**
> The condensing unit ships from the factory pressurized with a 50/50 mixture of nitrogen/helium. Bleed off pressure from both suction and liquid line access ports prior to cutting into refrigeration lines.

The compressor oil rapidly absorbs moisture. **Be prepared** to complete line set installation and start your evacuation process in order to minimize the time the compressor is exposed to the atmosphere. (Maximum amount of time the system can be exposed to the atmosphere is 15 minutes). The line set can be routed for entry through the front or left side of the condensing unit.

- Remove knockout for preferred location.
- Insert supplied plastic bushings in knockout holes to prevent tubing from contacting sheet metal.
- Use the supplied 90° elbows to route tubing.
- Cut the tubing ends of the suction and liquid lines and braze the line sets to the condensing unit.


SUCTION FILTER
SUCTION LINE
MINIMIZE THE TIME THE REFRIGERATION SYSTEM IS EXPOSED TO THE ATMOSPHERE (15 MINUTES MAXIMUM)
SV2085



Step 5 Pressure Test and Evacuate The Line Set and CVD Condensing Unit

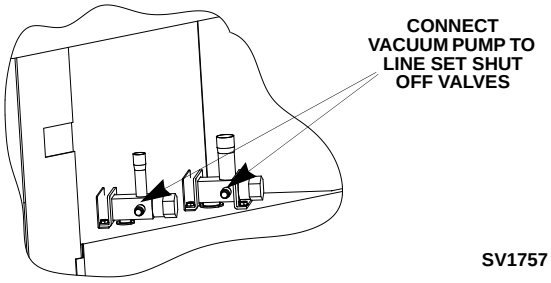
Schrader valve core removal tools that allow for removal and installation of the valve cores without removing manifold gauge set hoses are recommended to decrease the evacuation time.

Leave the line set shut off valves closed (front seated). Pressure test the line sets and CVD condensing unit with 150 psig of dry nitrogen. Add nitrogen at the line set shut off valves located at the back of the ice machine. Complete the pressure test, verify no leaks are present and remove the nitrogen from the system before connecting the vacuum pump. Connect a vacuum pump to both of the line set shut off valves located at the back of the ice machine head section. Evacuate to 500 microns (or less). To completely evacuate the CVD condensing unit, continue the evacuation for 30 minutes after reaching the 500 micron point.

If required, the line set and condensing unit can be evacuated from the schrader valves located in the CVD condensing unit. Schrader valve core removal tools (that allow for putting the cores back in without removing vacuum pump hoses) must be used if evacuating from the condensing unit side.

Isolate the vacuum pump from the line set shut off valves and/or condensing unit access ports prior to proceeding. Open refrigeration system shut off valves.

The suction line, liquid line and receiver service valves are closed during shipment and installation.



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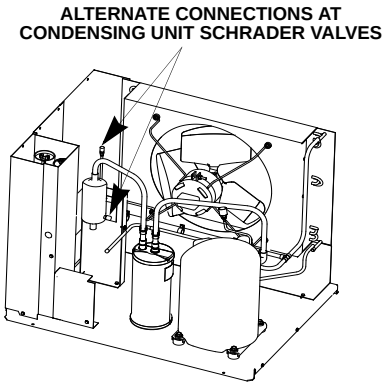

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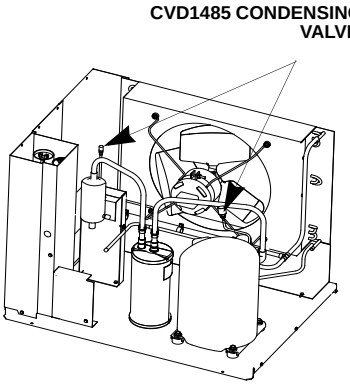

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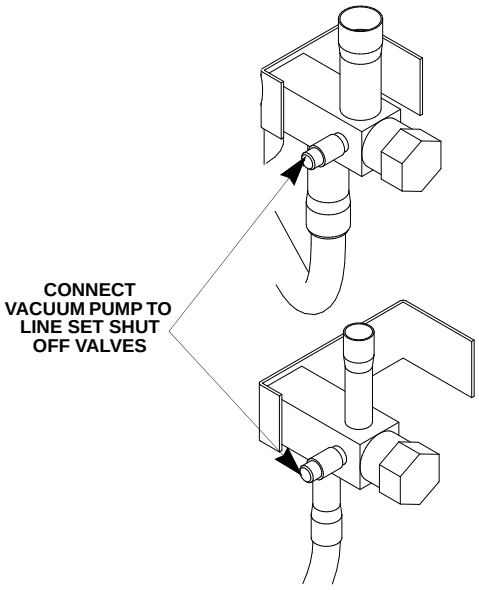

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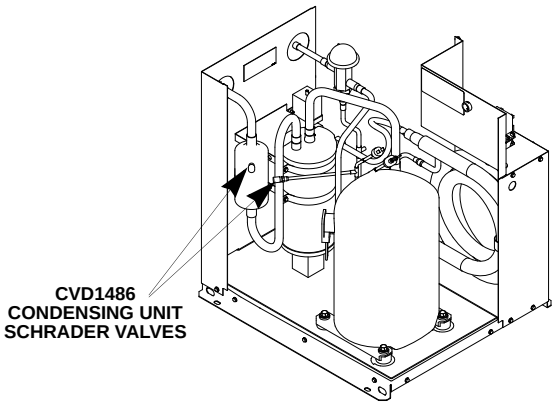


SV3081

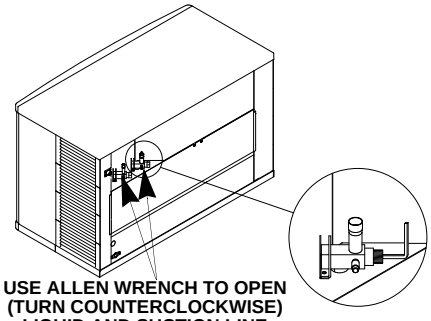
Step 6 Open The Valves Prior To Starting The Ice Machine.

A. Slowly backseat (open-turn counterclockwise) the suction line shut off valve.

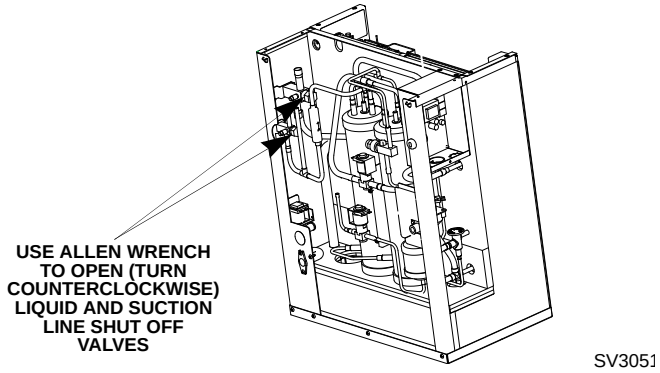
B. Slowly backseat (open-turn counterclockwise) the liquid line shut off valve.

C. Slowly backseat (open-turn counterclockwise) the receiver service valve.

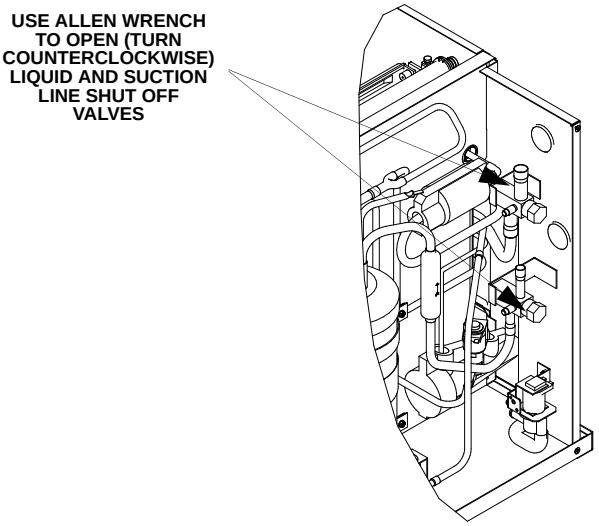
NOTE: You will not hear refrigerant flow when the valves are opened. Refrigerant will not flow until the toggle switch is placed in the ice position and the solenoid valve opens.



OPEN SUCTION AND LIQUID LINE SHUT OFF VALVES S0600C/S0850C/S1000C/S1200C



OPEN SUCTION AND LIQUID LINE SHUT OFF VALVES IB0600C/IB0800C/IB1000C



OPEN SUCTION AND LIQUID LINE SHUT OFF VALVES S1470C/S1870C/S2170C

⚠ Caution

After opening suction, discharge and receiver service valves, refrigerant pressure will not be detected until the toggle switch is placed in the ice position and the harvest solenoid valve energizes.

Important

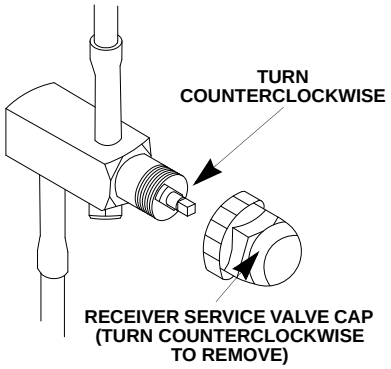
All refrigeration valve caps must be reinstalled to prevent future refrigeration leaks.

Verify O-ring in schrader valve caps are intact and reinstall on shut off valves to prevent refrigerant leakage. Replace shut off valve access caps and torque to the following specifications.

Torque Value's

Stem	18-20 ft. lbs.
Caps	12-15 ft. lbs.
Schrader Core	1.5-3 in. lbs.

Replace cap on receiver service valve and tighten.



Open Receiver Service Valve

There is a liquid line solenoid valve at the outlet of the receiver; refrigerant will not flow to the condensing unit until the ice machine head section is started. Connect power to both the ice machine head section and the CVD condensing unit. Place the ICE/OFF/CLEAN toggle switch into the ICE position, this will allow refrigerant to enter the line set and condensing unit.

Step 7 Leak Check The Refrigeration System

Leak check the new line set connections at the ice machine head section, condensing unit and S trap as well as all factory joints throughout the entire system. Disconnect power to the CVD condensing unit. Place the ICE/OFF/CLEAN toggle switch into the ICE position. This allows the low side and high side pressures to equalize. Place the ICE/OFF/CLEAN toggle switch in the OFF position. Connect power to the CVD condensing unit and allow system to pump down.

Step 8 Insulation Requirements

To prevent condensation the entire suction line including the shut-off valve must be insulated. All insulation must be airtight and sealed at both ends.

The following insulation requirements prevent condensation at 90°F (32.2°C) ambient 90% Relative Humidity. If higher humidity is expected, increase insulation thickness.

The entire suction line set, including the suction service valve located on the back of the ice machine requires:

Suction Line	Liquid Line	Min. Insulation Thickness
3/4 inch (19.1 mm)	1/2 inch (12.7 mm)	1/2”(13mm) Suction Line 1/4” (7mm) Liquid Line
5/8 inch (15.9 mm)	3/8 inch (9.5 mm)	
3/4 inch (19.1 mm)	5/8 inch (15.9 mm)	3/4” (19mm) Suction Line 1/4” (7mm) Liquid Line

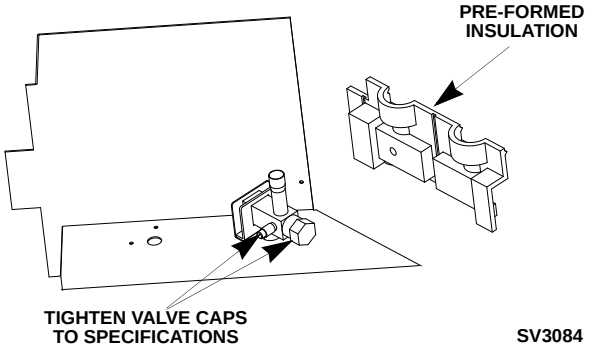
Important

To prevent condensation the entire suction line including the shut off valve must be insulated. All insulation must be airtight and sealed at both ends. The minimum requirements are for conditions at or below 90% humidity and 90°F (32.2°C) ambient. When higher humidity will be experienced, insulation wall thickness will need to be increased.

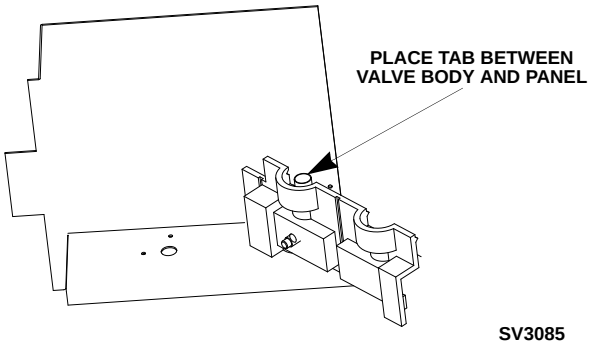
Suction Shut Off Valve Insulation

The pre-formed suction shut-off valve insulation is located in the plastic bag taped to the water curtain.

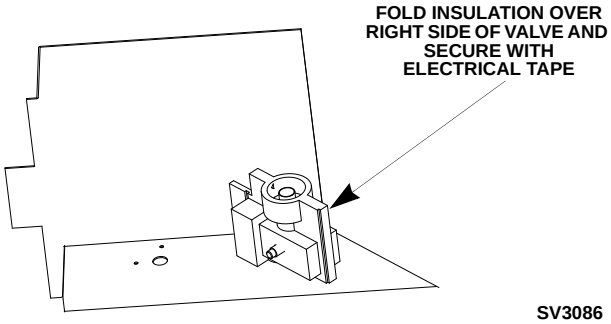
A. Verify valve and schrader caps are tightened to specifications (see Step 6).

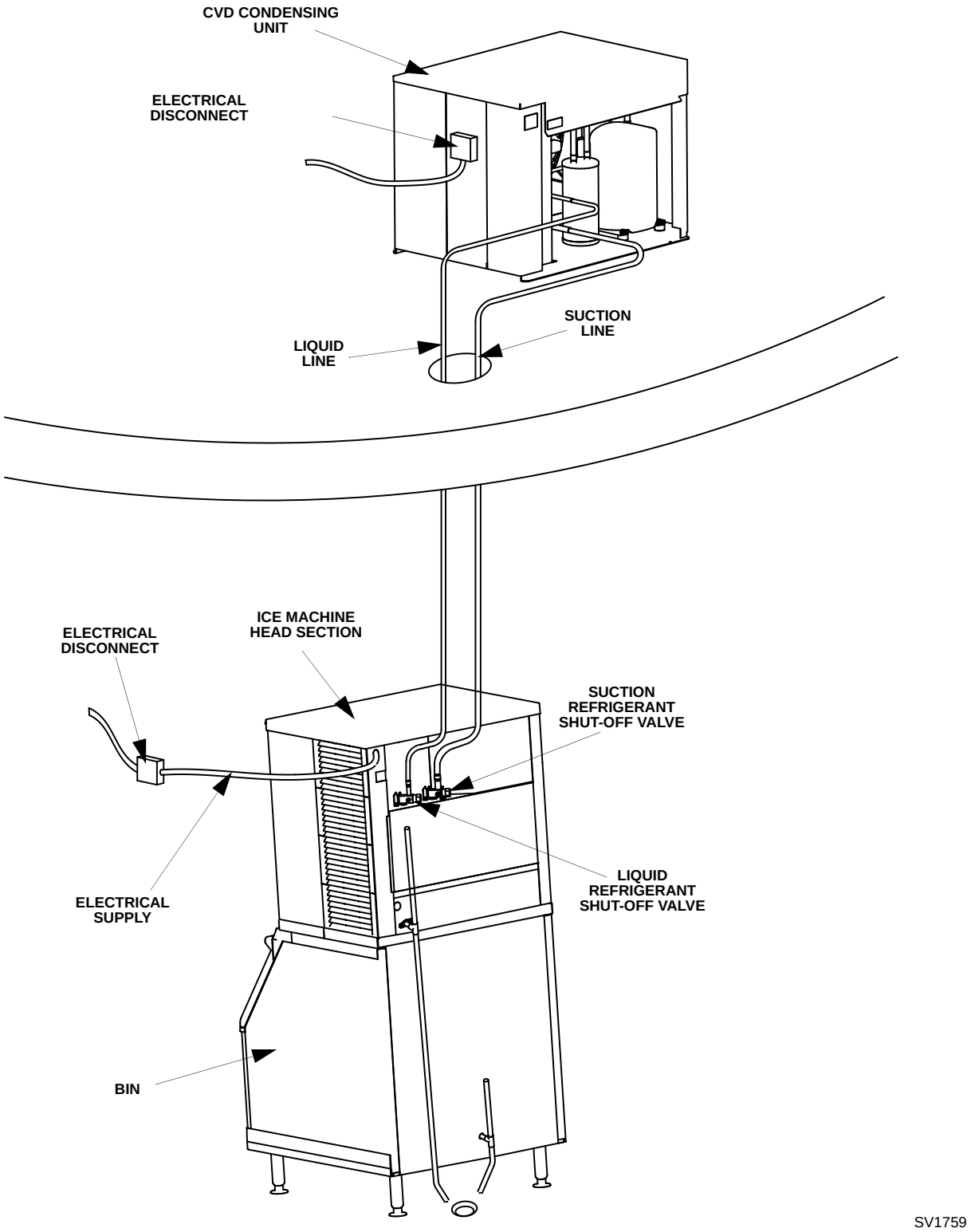


B. Place insulation over schrader valve cap and left side of valve. Position the tab between the mounting bracket and rear panel.

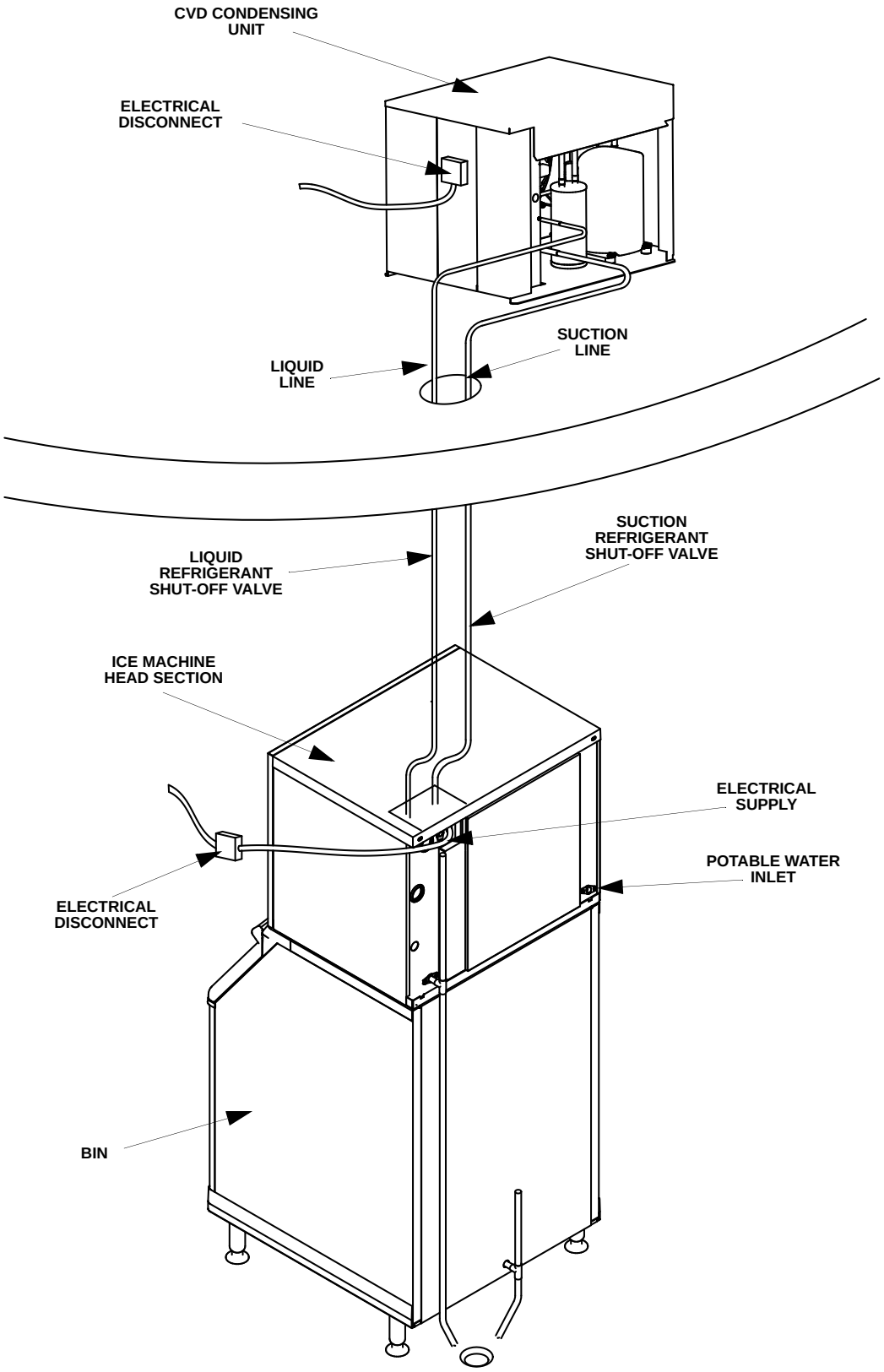


C. Fold insulation and hold against right hand side of valve while securing with electrical tape. Seal the line set insulation to the shut off valve insulation with electrical tape.

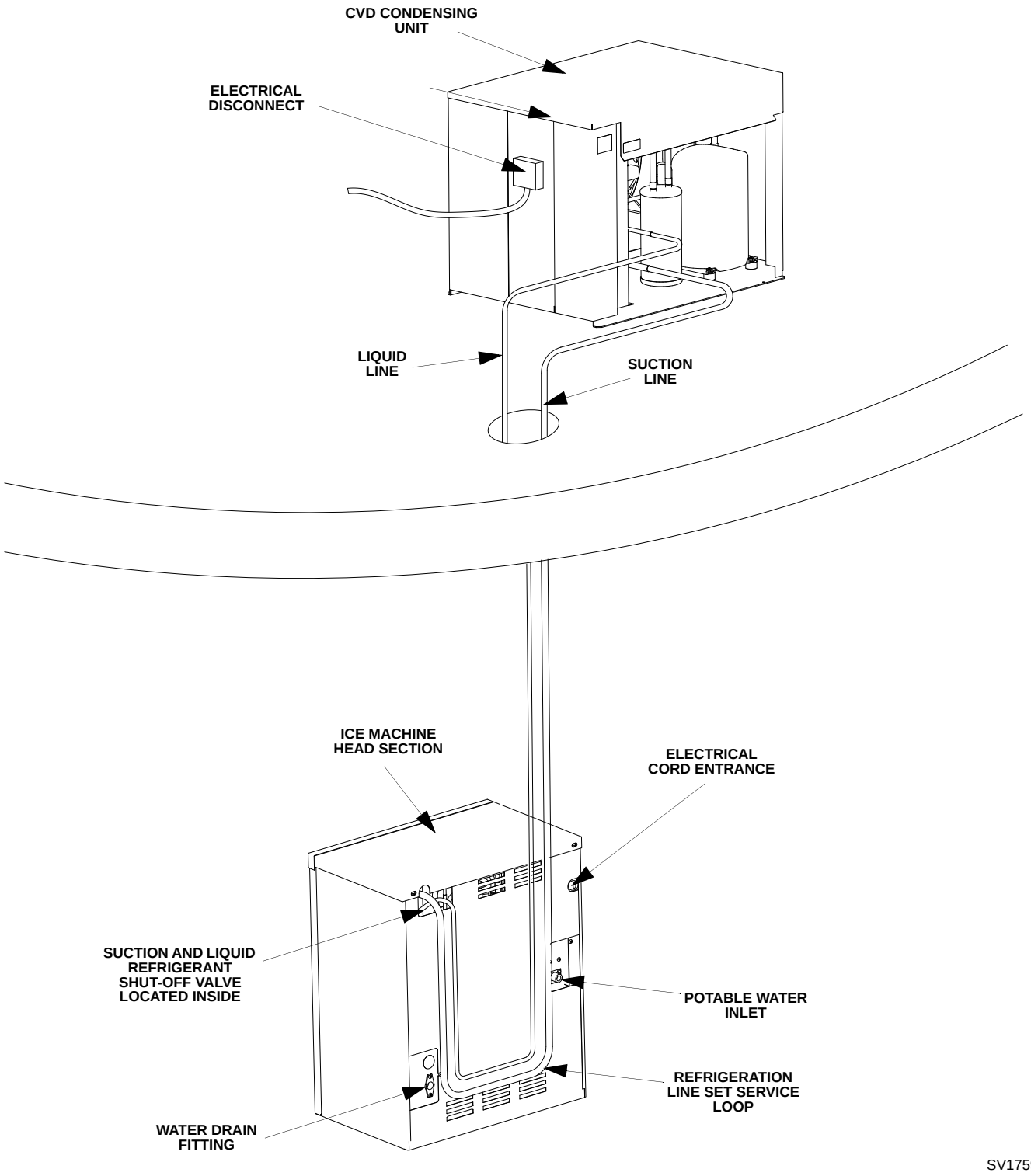




Typical QuietQube® System Installation - S600C/S850C/S1000C/S1200C



Typical QuietQube® System Installation - S1470C/S1870C/S2170C

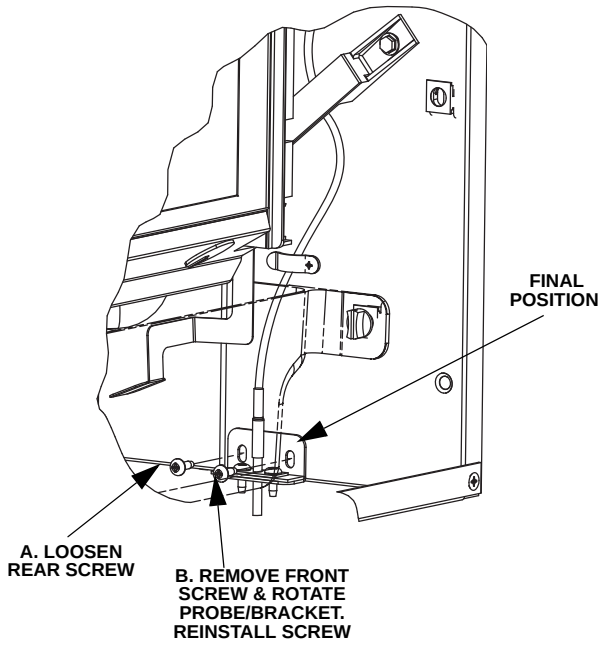


Typical Ice/Beverage System Installation - IB600C/IB800C/IB1000C

Electronic Bin Thermostat Instructions IB600C/IB800C/IB1000C Only

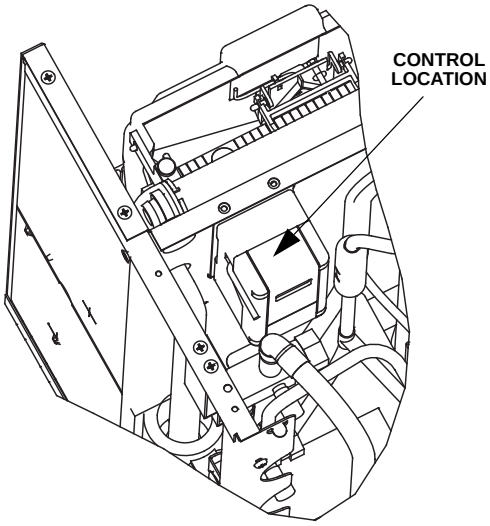
POSITIONING

1. Remove water trough.
2. Refer to illustration:
   A. Loosen rear screw.
   B. Remove front screw & rotate probe/bracket.
   C. Re-install front screw & tighten.
   D. Tighten rear screw.



Bin Thermostat Location

3. Re-install water trough.
4. Remove slack from sensor probe wire and verify wire does not contact or obstruct the water curtain.



Control Location

5. The control is preset and does not require programming

Installation Checklist

- ☐ Is the Ice Machine level?
- ☐ Has all of the internal packing been removed?
- ☐ Have all of the electrical and water connections been made?
- ☐ Has the supply voltage been tested and checked against the rating on the nameplate?
- ☐ Is there proper clearance around the ice machine for air circulation?
- ☐ Has the ice machine been installed where ambient temperatures will remain in the range of 35° - 110°F (2° - 43°C)?
- ☐ Has the ice machine been installed where the incoming water temperature will remain in the range of 35° - 90°F (2° - 32°C)?
- ☐ Are the ice machine and bin drains separately vented?
- ☐ Are all electrical leads free from contact with refrigeration lines and moving equipment?
- ☐ Has the owner/operator been instructed regarding maintenance and the use of Manitowoc Cleaner and Sanitizer?
- ☐ Has the warranty registration card been sent to the factory?
- ☐ Has the ice machine and bin been sanitized?
- ☐ IB Only - Has the thermostat kit been installed and tested?
- ☐ IB Only - Is the adapter secured to the dispenser?
- ☐ Has the ice machine receiver service valve been opened 100%?
- ☐ Does the condenser fan motor operate properly after start-up?
- ☐ Have all the refrigeration fittings and joints been leak checked?
- ☐ Is the line set routed properly?
- ☐ Is a refrigeration oil trap (S-trap) installed if the condenser is installed 21 to 35 feet (6 to 11m) above the ice machine head?
- ☐ Has the CVD® condensing unit been installed to prevent any roofing damage?
- ☐ Have the refrigeration lines been insulated and secured properly to prevent vibration?
- ☐ Has the remote condensing unit been located where ambient temperatures will remain in the range of -20° to 130°F (-29° to 54°C)? *CVD675/CVD2085 Only* - The air temperature must be at least -20°F (-29°C) but must not exceed 120°F (49°C).
- ☐ Are the plastic bushings installed on the CVD® condensing unit to prevent refrigeration tubing from contacting the sheet metal panel?
- ☐ CVD1486 Only - Is the drain installed on the condensing unit?
- ☐ Is the condensing unit level?

Before Starting the Ice Machine

All Manitowoc ice machines are factory-operated and adjusted before shipment. Normally, new installations do not require any adjustment.

To ensure proper operation, follow the Operational Checks in Section 3 of this manual. Starting the ice machine and completing the Operational Checks are the responsibilities of the owner/operator.

Adjustments and maintenance procedures outlined in this manual are not covered by the warranty.

⚠ Warning

Potential Personal Injury Situation

Do not operate equipment that has been misused. abused, neglected, damaged, or altered/modified from that of original manufactured specifications.

AuCS® Automatic Cleaning System

This optional accessory monitors ice making cycles and initiates cleaning procedures automatically. The AuCS® accessory can be set to automatically clean or sanitize the ice machine every 2, 4 or 12 weeks.

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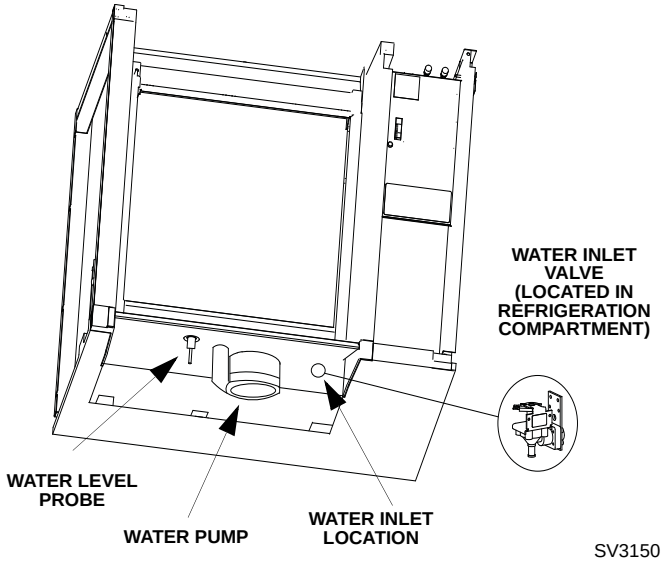
Section 3
Ice Machine Operation

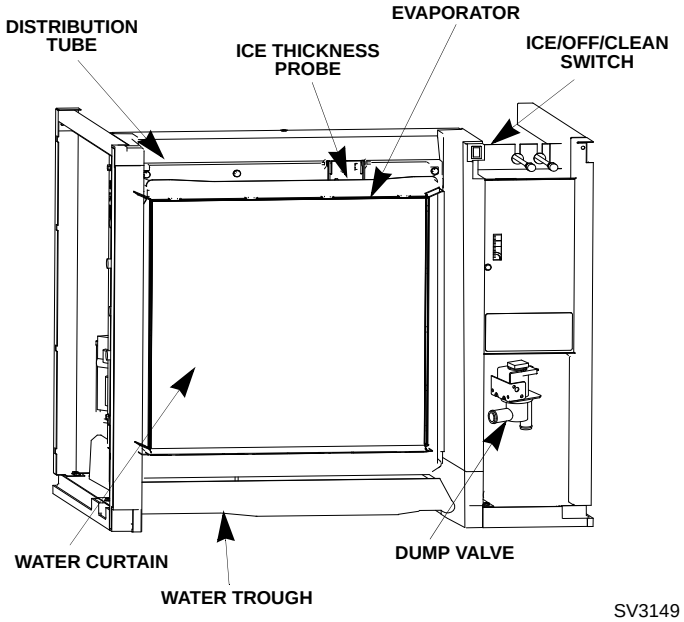
Component Identification

ICE MACHINE HEAD SECTION

S600C/S850C/S1000C/S1200C

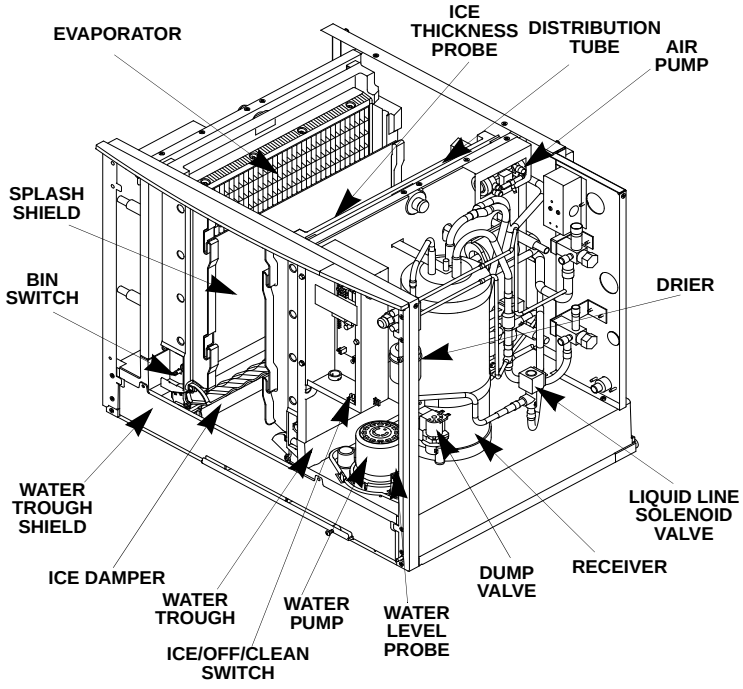


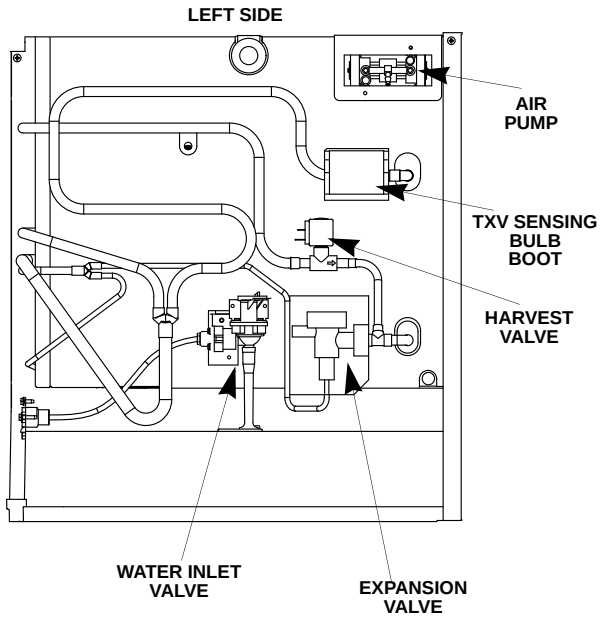
SV3150



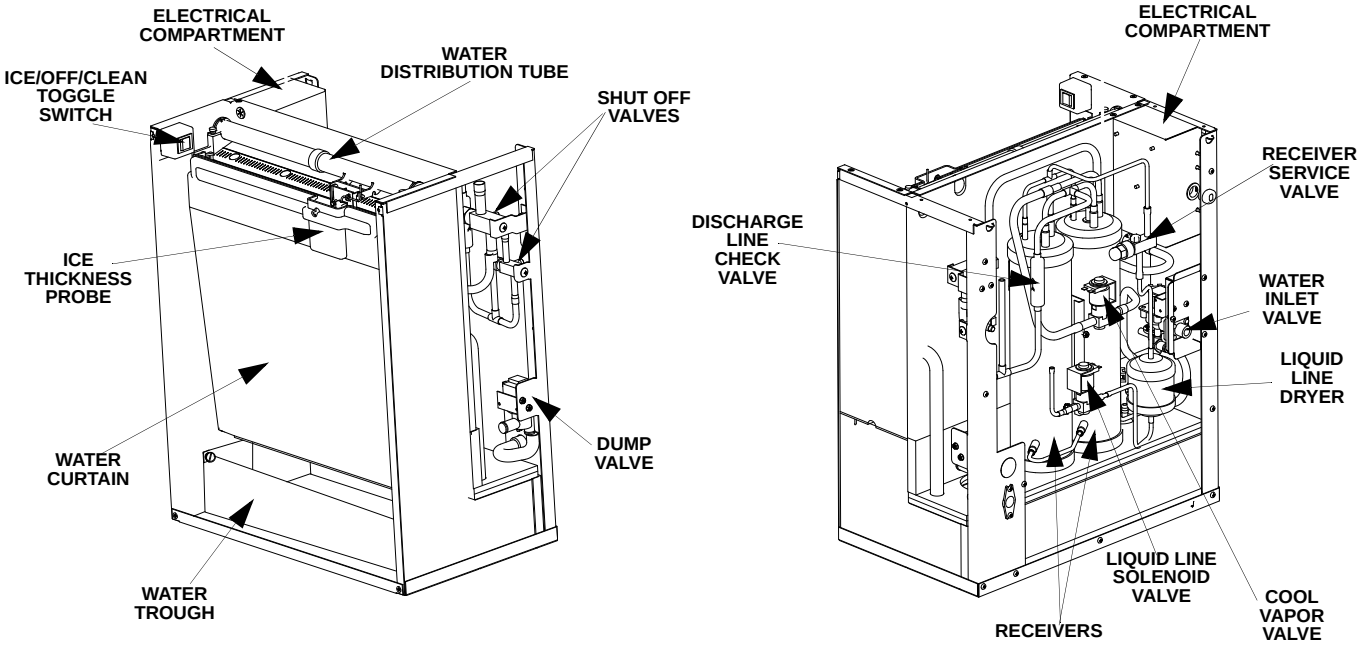
SV3149

S1470C/S1870C/S2170C



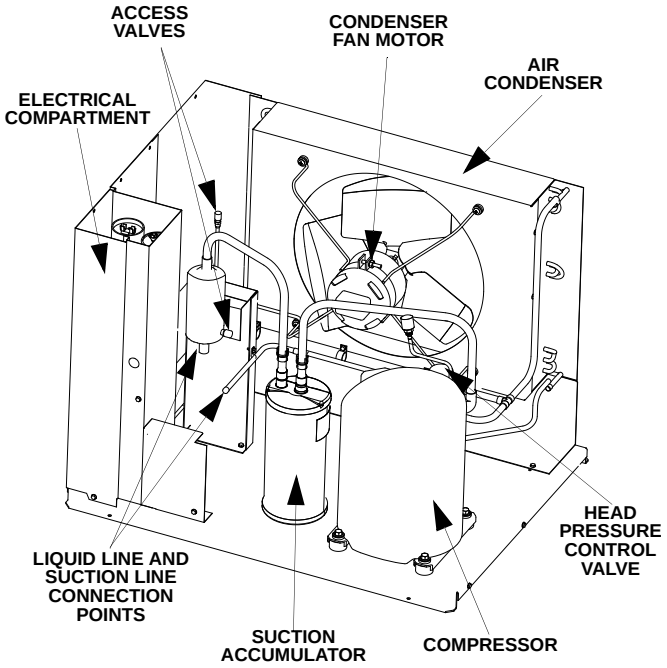


IB0600C/IB0800C/IB1000C



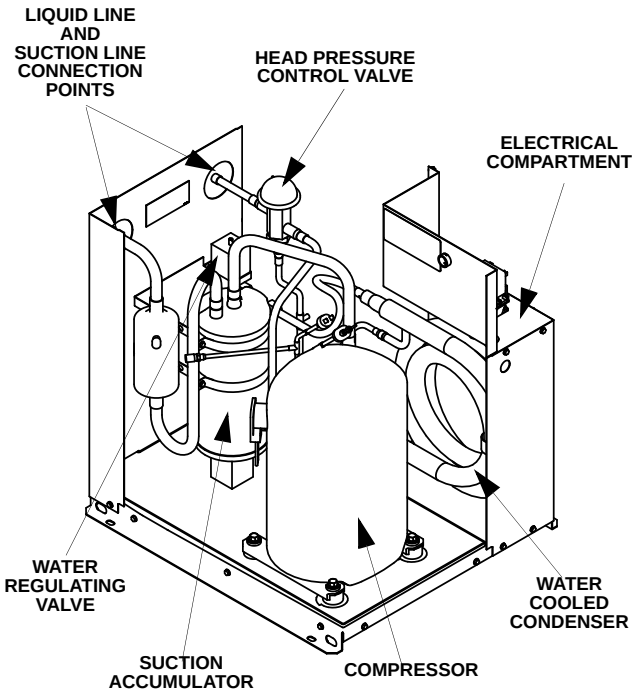
CONDENSING UNITS

CVD0675/CVD0875/CVD0885/CVD1085/ CVD1185/CVD1285/CVD1485



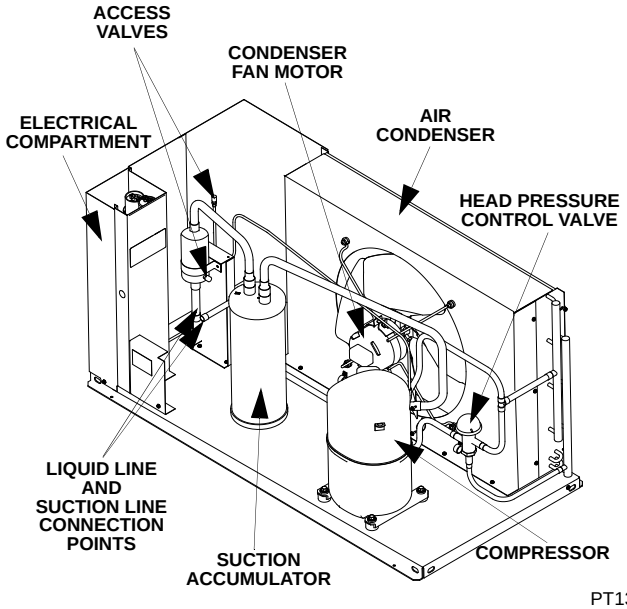
SV2085

CVD1486



PT1382

CVD1885/CVD2085



PT1306A

Ice Making Sequence of Operation

INITIAL START-UP OR START-UP AFTER AUTOMATIC SHUT-OFF

1. Water Purge

Before the compressor starts, the water pump and water dump solenoid are energized for 45 seconds, to completely purge the ice machine of old water. This feature ensures that the ice making cycle starts with fresh water.

The harvest valve and air compressor (when used) are also energized during water purge, although they stay on for an additional 5 seconds (50 seconds total on time) during the initial refrigeration system start-up.

2. Refrigeration System Start-Up

Ice Machine Head Section: The liquid line solenoid valve energizes after the 45 second water purge, and remains on throughout the entire Freeze and Harvest Sequences. The harvest valve and air compressor (when used) remains on for 5 seconds during initial compressor start-up and then shuts off.

The water fill valve is energized at the same time as the liquid line solenoid valve.

CVD Condensing Unit: When the refrigerant pressure is high enough to close the low-pressure control, (after the harvest valve energizes in step 1) the contactor coil is energized and the compressor starts. The compressor and fan cycling control* are supplied with power throughout the entire Freeze and Harvest Sequences. When the refrigerant pressure is high enough to close the fan cycling pressure control the condenser fan motor starts.

*The IB0600C & S0600C ice machines do not use a fan cycling control. The compressor and the condenser fan motor are wired through the contactor. Any time the contactor coil is energized, these components are supplied with power.

FREEZE SEQUENCE

3. Prechill

The compressor is on for 30 seconds (60 seconds initial cycle) prior to water flow, to prechill the evaporator. The water fill valve remains on until the water level probe is satisfied.

4. Freeze

The water pump restarts after the prechill. An even flow of water is directed across the evaporator and into each cube cell, where it freezes. The water fill valve will cycle on and then off one more time to refill the water trough.

When sufficient ice has formed, the water flow (not the ice) contacts the ice thickness probe. After approximately 10 seconds of continual water contact, the harvest sequence is initiated. The ice machine cannot initiate a harvest sequence until a 6 minute freeze lock has been surpassed.

HARVEST SEQUENCE

5. Water Purge

The air compressor (when used) and the harvest valve(s) open at the beginning of the water purge to divert refrigerant gas into the evaporator. The water pump continues to run, and the water dump valve energizes for 45 seconds to purge the water in the sump trough. The water fill valve energizes for the last 15 seconds of the 45-second water purge.

After the 45 second water purge, the water fill valve, water pump and dump valve de-energize. (Refer to "Water Purge Adjustment" for details.)

When the refrigerant pressure is low enough to open the fan cycling pressure control the condenser fan motor stops.

* The IB0600C & S0600C ice machines do not use a fan cycle control, therefore the condenser fan motor will continue to run in the harvest cycle.

6. Harvest

The air compressor (when used) remains energized and the harvest valve(s) remain open. The refrigerant gas warms the evaporator causing the cubes to slide, as a sheet, off the evaporator and into the storage bin. The sliding sheet of cubes swings the water curtain out or ice damper down, opening the bin switch.

The momentary opening and re-closing of the bin switch terminates the harvest sequence and returns the ice machine to the freeze sequence (steps 3-4).

S1470C/S1870C/S2170C Only
6A. Water Assist Harvest Feature

Typical duration of a Harvest sequence is less than 2.5 minutes. When the Harvest sequence time reaches 4 minutes, the following occurs:
4 minutes into a Harvest sequence: The water fill valve will energize to fill the trough with water. 5 minutes into a Harvest sequence: The water pump will energize and flow water over the evaporators. The water fill valve and water pump remain on until all bin switches have been activated, or until the 7-minute Harvest sequence time limit is reached.

AUTOMATIC SHUT-OFF

7. Automatic Shut-Off

Ice Machine Section: Shuts off when:

- The storage bin is full at the end of a harvest sequence.
- The sheet of cubes fails to clear the water curtain and hold it open.
- Ice damper is held down.

After the water curtain or ice damper are held open for 30 seconds, the ice machine shuts off. The ice machine remains off for 3 minutes before it can automatically restart.

CVD Condensing Unit: The liquid line solenoid valve closes, allowing the refrigeration system to pump down. When the refrigerant pressure is low enough to open the fan cycling pressure control the condenser fan motor stops. When the refrigerant pressure is low enough to open the low pressure control, the contactor coil is de-energized and the compressor stops.

The ice machine remains off until enough ice has been removed from the storage bin to allow the ice to fall clear of the water curtain or ice damper. As the water curtain or ice damper swings back to the operating position, the bin switch re-closes and the ice machine restarts (steps 1 - 2), provided the 3 minute delay period is complete.

* The IB0600C & S0600C ice machines do not use a fan cycle control, therefore the condenser fan motor will energize and de-energize with the compressor.

Operational Checks

GENERAL

Manitowoc ice machines are factory-operated and adjusted before shipment. Normally, a newly installed ice machine does not require any adjustment.

To ensure proper operation, always follow the Operational Checks:

- when starting the ice machine for the first time
- after a prolonged out of service period
- after cleaning and sanitizing

NOTE: Routine adjustments and maintenance procedures outlined in this manual are not covered by the warranty.

WATER LEVEL

The water level sensor is set to maintain the proper water level above the water pump housing. The water level is not adjustable.

If the water level is incorrect, check the water level probe for damage (probe bent, etc.). Repair or replace the probe as necessary.

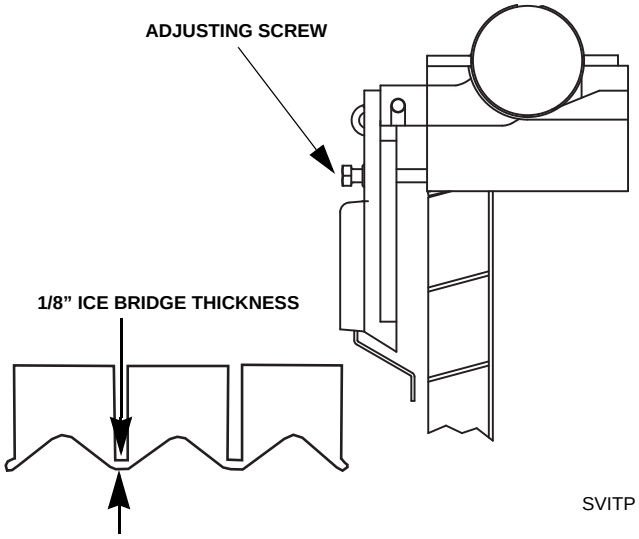
ICE THICKNESS CHECK

After a harvest cycle, inspect the ice cubes in the ice storage bin. The ice thickness probe is factory-set to maintain the ice bridge thickness at 1/8" (3.2 mm).

NOTE: Make sure the water curtain is in place when performing this check. It prevents water from splashing out of the water trough.

1. Inspect the bridge connecting the cubes. It should be about 1/8" (3.2 mm) thick.
2. If adjustment is necessary, turn the ice thickness probe adjustment screw clockwise to increase bridge thickness, counterclockwise to decrease bridge thickness. Set at 1/4” gap between ice machine and evaporator as starting point, then adjust to achieve a 1/8” bridge thickness.

NOTE: Turning the adjustment 1/3 of a turn will change the ice thickness about 1/16" (1.5 mm).



Ice Thickness Check

3. Make sure the ice thickness probe wire and the bracket do not restrict movement of the probe.

HARVEST SEQUENCE WATER PURGE

The harvest sequence water purge adjustment may be used when the ice machine is hooked up to special water systems, such as a de-ionized water treatment system.

⚠ Warning

Disconnect electric power to the ice machine at the electrical disconnect before proceeding.

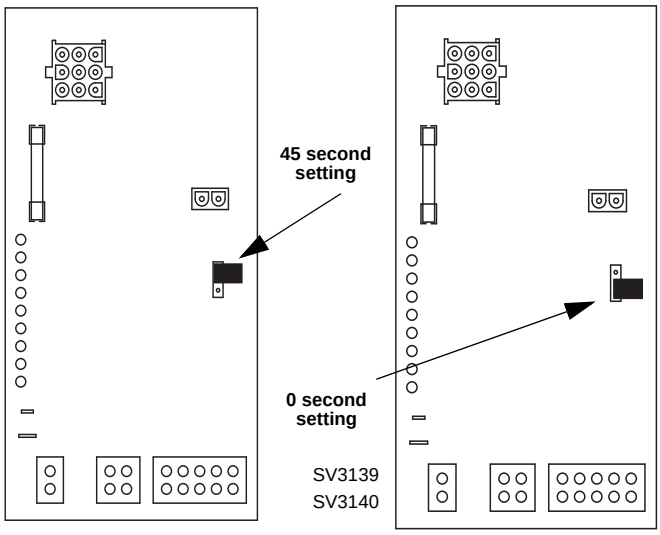
Important

The harvest sequence water purge is factory-set at 45 seconds. A shorter purge setting (with standard water supplies such as city water) is not recommended. This can increase water system cleaning and sanitizing requirements.

- The harvest sequence water purge is factory set for 45 seconds. Repositioning the jumper will set the harvest water purge to 0 seconds. This setting does not affect the SeCs or AuCs (cleaning) sequences.
- During the harvest sequence water purge, the water fill valve energizes and de-energizes by time. The water purge must be at the factory setting of 45 seconds for the water fill valve to energize during the last 15 seconds of the water purge. If it is set to less than 45 seconds, the water fill valve will not energize during the water purge.

⚠ Warning

Disconnect the electrical power to the ice machine at the electrical disconnect before proceeding.



Water Purge Adjustment

For your safety and to eliminate errors, we recommend that a qualified service technician make the harvest water purge adjustment.

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Section 4
Maintenance

Interior Cleaning and Sanitizing

GENERAL

Clean and sanitize the ice machine every six months for efficient operation. If the ice machine requires more frequent cleaning and sanitizing, consult a qualified service company to test the water quality and recommend appropriate water treatment. The ice machine must be taken apart for cleaning and sanitizing.

⚠ Caution

Use only Manitowoc approved Ice Machine Cleaner and Sanitizer for this application (Manitowoc Cleaner part number 94-0546-3 and Manitowoc Sanitizer part number 94-0565-3). It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling. Read and understand all labels printed on bottles before use.

CLEANING PROCEDURE

⚠ Caution

Do not mix Cleaner and Sanitizer solutions together.

⚠ Warning

Wear rubber gloves and safety goggles (and/or face shield) when handling ice machine Cleaner or Sanitizer.

Ice machine cleaner is used to remove lime scale and mineral deposits. Ice machine sanitizer disinfects and removes algae and slime.

Step 1 Remove front door and top cover. This will allow easiest access for adding cleaning and sanitizing solutions.

Step 2 Set the toggle switch to the OFF position after ice falls from the evaporator at the end of a Harvest cycle. Or, set the switch to the OFF position and allow the ice to melt off the evaporator.

⚠ Caution

Never use anything to force ice from the evaporator. Damage may result.

Step 3 Remove all ice from the bin/dispenser.

Step 4 Place the toggle switch in the CLEAN position. The water will flow through the water dump valve and down the drain. Wait until the water trough refills and water flows over the evaporator, then add the proper amount of ice machine cleaner.

Model	Amount of Cleaner
S0600C/S0800C S1000C/S1200C	3 ounces (90 ml)
S1470C/S1870C/S2170C	9 ounces (270 ml)
IB620C/IB820C/IB1020C	5 ounces (150 ml)

Step 5 Wait until the clean cycle is complete (approximately 35 minutes) then place the toggle switch in the OFF position and disconnect power to the ice machine (and dispenser when used).

⚠ Warning

Disconnect the electric power to the ice machine at the electric service switch box.

Step 6 Remove parts for cleaning.

Please refer to the proper parts removal for your ice machine.

S600C/S850C/S1000C/S1200C - Page 4-2 & 4-3.

S1470C/S1870C/S2170C - Page 4-4 & 4-5.

IB620C/IB820C/IB1020C - Page 4-6 & 4-7.

PARTS REMOVAL FOR CLEANING/SANITIZING

S600C/S850C/S1000C/S1200C

A. Remove the water curtain

- Gently flex the curtain in the center and remove it from the right side.
- Slide the left pin out.

B. Remove the ice thickness probe

- Compress the hinge pin on the top of the ice thickness probe.
- Pivot the ice thickness probe to disengage one pin then the other. The ice thickness probe can be cleaned at this point without complete removal. If complete removal is desired, disconnect the ice thickness control wiring from the control board.

C. Remove the water distribution tube

NOTE: Distribution tube thumbscrews are retained to prevent loss. Loosen thumbscrews but do not pull thumbscrews out of distribution tube.

- Loosen the two outer screws (do not remove screws completely they are retained to prevent loss) and pull forward on the distribution tube to release from slip joint.
- Disassemble distribution tube by loosening the two (2) middle thumbscrews and dividing the distribution tube into two pieces.

D. Remove the water trough

- Depress tabs on right and left side of the water trough.
- Allow front of water trough to drop as you pull forward to disengage the rear pins.

E. Remove the water level probe

- Pull the water level probe straight down to disengage.
- Lower the water level probe until the wiring connector is visible.
- Disconnect the wire lead from the water level probe.
- Remove the water level probe from the ice machine.

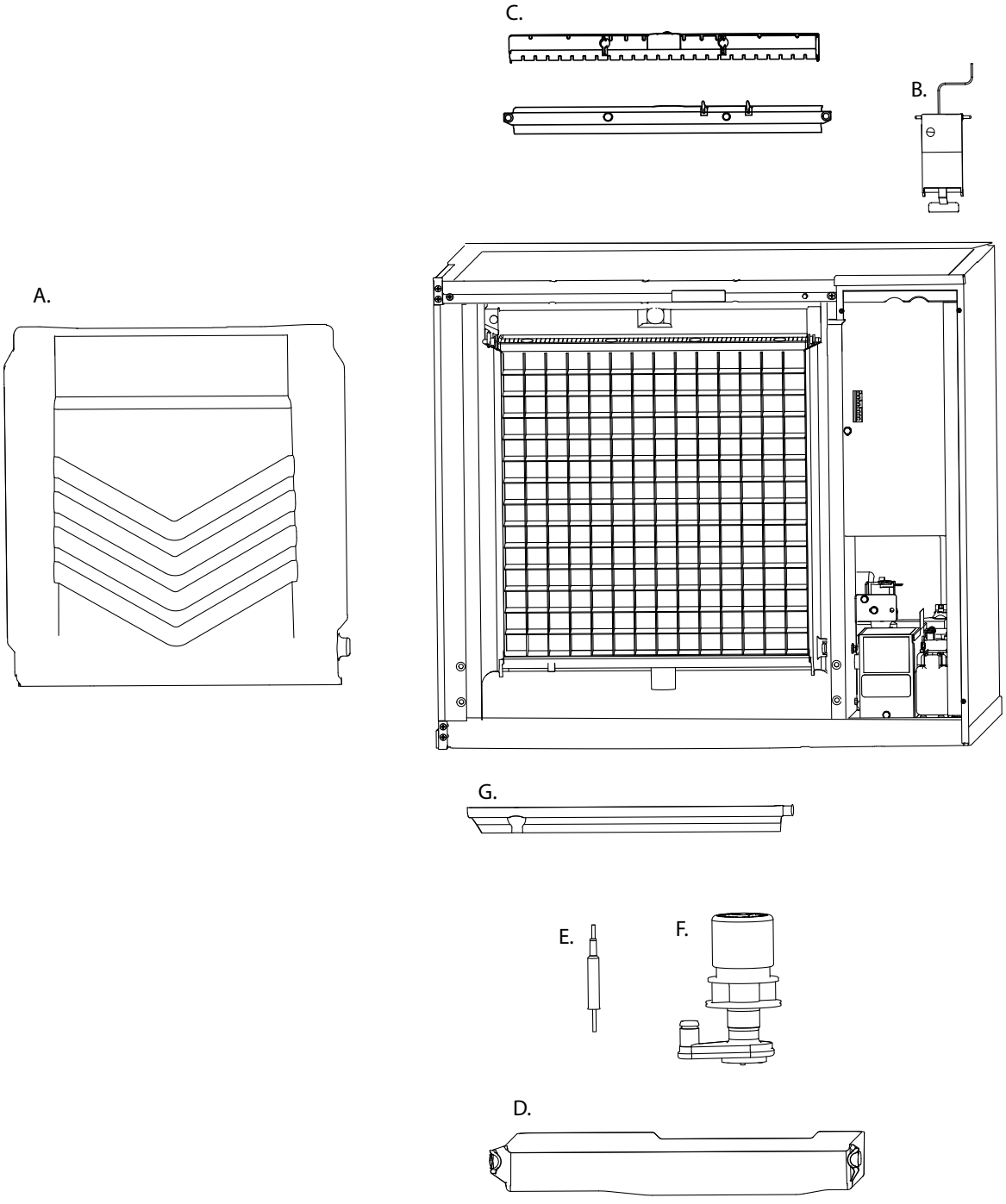
F. Remove the water pump.

- Grasp pump and pull straight down on pump assembly until water pump disengages and electrical connector is visible.
- Disconnect the electrical connector.
- Remove the water pump assembly from ice machine.
- Do not soak the water pump motor in cleaner or sanitizer solution.

G. Remove the evaporator tray from the bottom of the evaporator.

- Loosen thumbscrew on left side of tray.
- Allow left side of tray to drop as you pull the tray to the left side. Continue until the outlet tube disengages from the right side.

NOTE: Proceed to page 4-8, Step 7.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S1470C/S1870C/S2170C

A. Remove Splash Shields.

- Grasp the top center of splash shields.
- Lift up and then out.

B. Remove ice thickness probe.

- Compress the hinge pin on the top of the ice thickness probe.
- Pivot the ice thickness probe to disengage one pin then the other. The ice thickness probe can be cleaned at this point without complete removal. If complete removal is desired, disconnect the ice thickness control wiring from the control board.

C. Remove distribution tubes.

- Distribution tubes thumbscrews are retained to prevent loss. Loosen thumbscrews but do not pull thumbscrews out of distribution tube.
- Loosen the two outer screws and pull forward on the distribution tube to release from slip joint.
- Disassemble distribution tube by loosening the two (2) middle thumbscrews and dividing the distribution tube into two pieces.

D. Remove the water trough shield.

- Grasp the water trough shield in the center and the left end.
- Flex the water trough shield in the center and pull the left end forward until clear of the side wall. Repeat for the right end.
- Pull water trough shield forward to remove.

E. Remove ice dampers.

- Grasp ice damper and apply pressure toward the back mounting bracket.
- Apply pressure to the front mounting bracket with thumb.
- Pull ice damper downward when the front ice damper pin disengages.

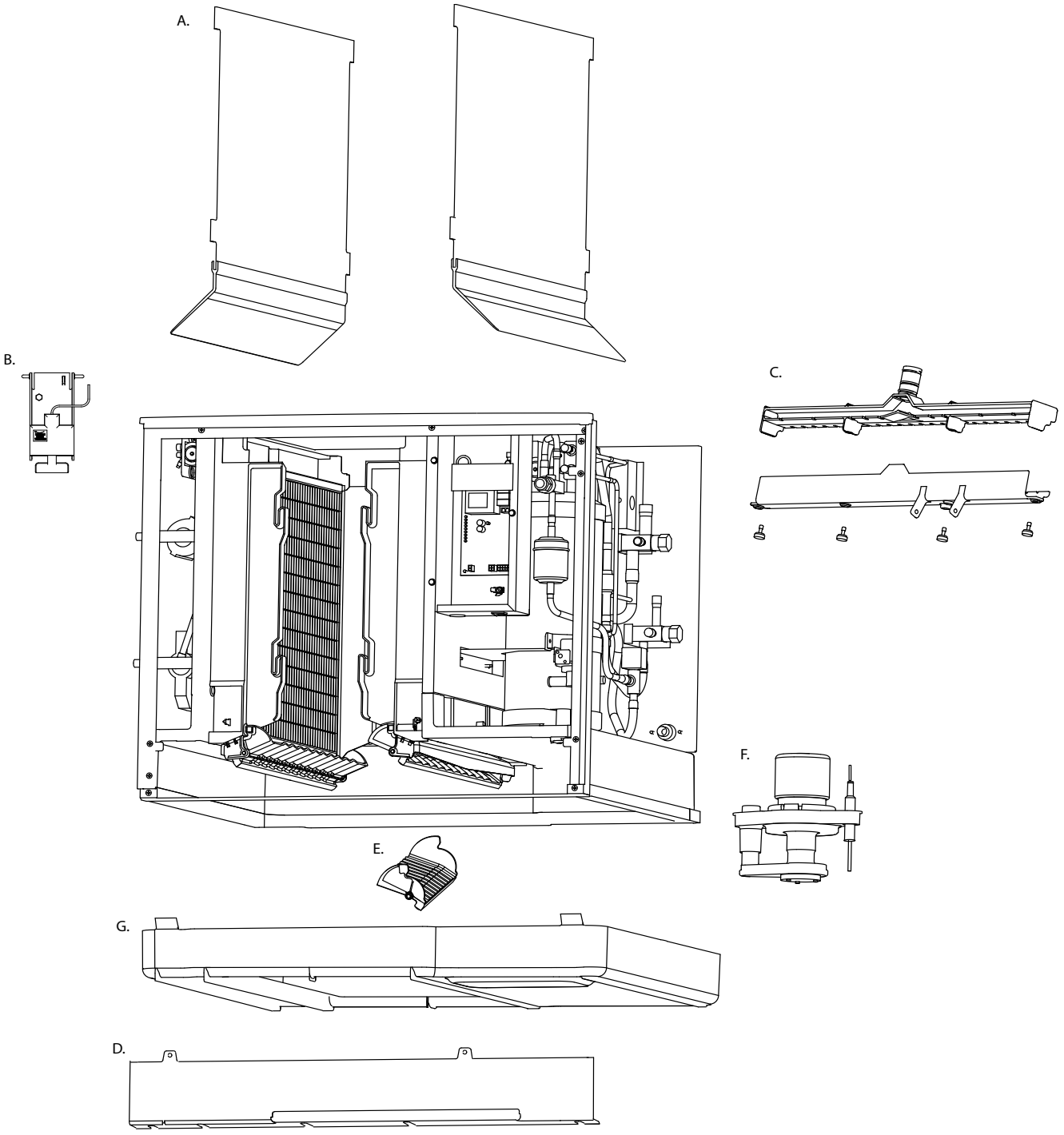
F. Remove the water pump assembly.

- Disconnect the vinyl distribution tube from the water pump.
- Disconnect the water pump and water level probe electrical connections.
- After the wires are disconnected squeeze the two tabs and lift the water pump assembly out of the ice machine.
- Do not immerse the water pump motor in cleaner or sanitizer solutions.

G. Remove the water trough.

- Depress the two tabs on the top of the water trough.
- Turn left and right ice dampers down to clear water trough.
- Pull forward on the water trough to remove.

NOTE: Proceed to page 4-8, Step 7.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IB620C/IB820C/IB1020C

A. Remove the splash shield

- Remove quarter turn connector from the right side of splash shield.
- Gently bow the center of the splash shield and lift up and forward to remove.

Important

Splash Shield must be reinstalled to prevent water leakage.

B. Remove the water curtain

- Gently flex the curtain in the center and remove it from the right side.
- Slide the left pin out.

C. Remove the ice thickness probe

- Compress the hinge pin on the top of the ice thickness probe.
- Pivot the ice thickness probe to disengage one pin then the other. The ice thickness probe can be cleaned at this point without complete removal. If complete removal is desired, disconnect the ice thickness control wiring from the control board.

D. Remove the water level probe

- Loosen the screw that holds the water level probe in place. The probe can easily be cleaned at this point without complete removal. If complete removal is desired, remove the top cover, left and right side panels and control box cover. Disconnect the wire lead from the control board inside the electrical control box.

E. Remove the water trough

- Remove the quarter turn fasteners (turn counterclockwise) securing the trough in place.
- Pull forward on the water trough until the rear pins disengage from the water trough.
- Lift up and forward on the front of the water trough while allowing the rear of the water trough to drop.
- Remove the water trough from the ice machine.

F. Remove the water distribution tube

- Remove the clamp from the vinyl water hose on the right side of the distribution tube.
- Loosen the two thumbscrews which secure the distribution tube.
- Lift the right side of the distribution tube up, and then rotate it backward and to the right until the left side of the distribution tube disengages the thumbscrew.

⚠ Caution

Do not force this removal. Be sure the locating tab is clear before rotating the distribution tube back.

- Pull the vinyl hose off the distribution tube.

Disassemble for cleaning:

- Twist both of the inner tube ends until the tabs line up with the keyways.
- Pull the inner tube ends outward.

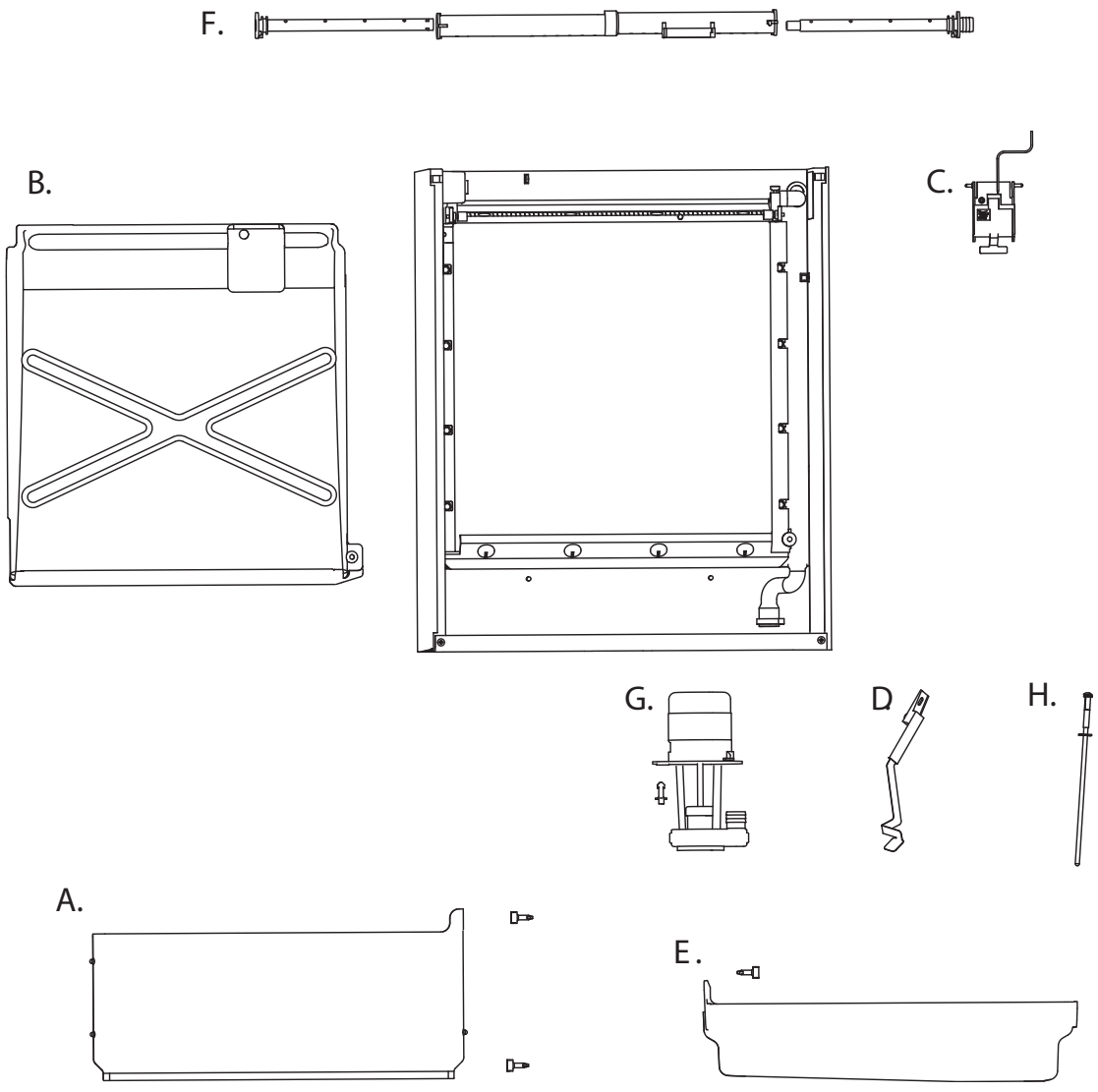
G. Remove the water pump.

- Note position of water ump outlet, and then disconnect vinyl hose from the pump outlet.
- Rotate the thumbscrew that secures the pump to the bulkhead 1/4 turn clockwise.
- Rotate the water pump assembly 1/4 turn counterclockwise.
- Lower the pump assembly into the evaporator compartment.
- Disconnect the water pump power cord.
- Remove water pump assembly from ice machine.Do not soak the water pump motor in cleaner or sanitizer solution

H. Remove the bin thermostat probe

- Loosen the 2 screws that holds the probe in place. The probe can easily be cleaned at this point without complete removal.

NOTE: Proceed to page 4-8, Step 7.


F.
B.
C.
G.
D
H.
A.
E.

Step 7 Mix a solution of cleaner and warm water. Depending upon the amount of mineral buildup, a larger quantity of solution may be required. Use the ratio in the table below to mix enough solution to thoroughly clean all parts.

Solution Type	Water	Mixed With
Cleaner	1 gal. (4 l)	16 oz (500 ml) cleaner

Step 8 Use 1/2 of the cleaner/water mixture to clean all components. The cleaner solution will foam when it contacts lime scale and mineral deposits; once the foaming stops use a soft-bristle nylon brush, sponge or cloth (NOT a wire brush) to carefully clean the parts. Soak parts for 5 minutes (15 - 20 minutes for heavily scaled parts). Rinse all components with clean water.

Step 9 While components are soaking, use 1/2 of the cleaner/water solution to clean all foodzone surfaces of the ice machine and bin (or dispenser). Use a nylon brush or cloth to thoroughly clean the following ice machine areas:

- Side walls
- Base (area above water trough)
- Evaporator plastic parts - including top, bottom, and sides
- Bin or dispenser

Rinse all areas thoroughly with clean water.

Step 10 Mix a solution of sanitizer and warm water.

Solution Type	Water	Mixed With
Sanitizer	6 gal. (23 l)	4 oz (120 ml) sanitizer

Step 11 Use 1/2 of the sanitizer/water solution to sanitize all removed components. Use a cloth or sponge to liberally apply the solution to all surfaces of the removed parts or soak the removed parts in the sanitizer/water solution. Do not rinse parts after sanitizing.

Step 12 Use 1/2 of the sanitizer/water solution to sanitize all foodzone surfaces of the ice machine and bin (or dispenser). Use a cloth or sponge to liberally apply the solution. When sanitizing, pay particular attention to the following areas:

- Side walls
- Base (area above water trough)
- Evaporator plastic parts - including top, bottom and sides
- Bin or dispenser

Do not rinse the sanitized areas.

Step 13 Replace all removed components.

Step 14 Reapply power to the ice machine and place the toggle switch in the CLEAN position.

Step 15 Wait about two minutes or until water starts to flow over the evaporator. Add the proper amount of Manitowoc Ice Machine Sanitizer to the water trough by pouring between the water curtain and evaporator.

Model	Amount of Sanitizer
S0600C/S0800C S1000C/S1200C	3 ounces (90 ml)
IB620C/IB820C	3 ounces (90 ml)
IB1020C	3.5 ounces (104 ml)
S1470C/S1870C/S2170C	12 ounces (355 ml)

Step 16 The ice machine will stop after the sanitize cycle (approximately 35 minutes). Place the toggle switch in the OFF position and disconnect power to the ice machine.

> **⚠ Warning**
> Disconnect the electric power to the ice machine at the electric service switch box.

Step 17 Refer to step 6 and disassemble components. After dissembling proceed to step 18.

Step 18 Mix a solution of sanitizer and warm water.

Solution Type	Water	Mixed With
Sanitizer	6 gal. (23 l)	4 oz (120 ml) sanitizer

Step 19 Use 1/2 of the sanitizer/water solution to sanitize all removed components. Use a cloth or sponge to liberally apply the solution to all surfaces of the removed parts or soak the removed parts in the sanitizer/water solution. Do not rinse parts after sanitizing.

Step 20 Use 1/2 of the sanitizer/water solution to sanitize all foodzone surfaces of the ice machine and bin (or dispenser). Use a cloth or sponge to liberally apply the solution. When sanitizing, pay particular attention to the following areas:

- Side walls
- Base (area above water trough)
- Evaporator plastic parts - including top, bottom and sides
- Bin or dispenser

Do not rinse the sanitized areas.

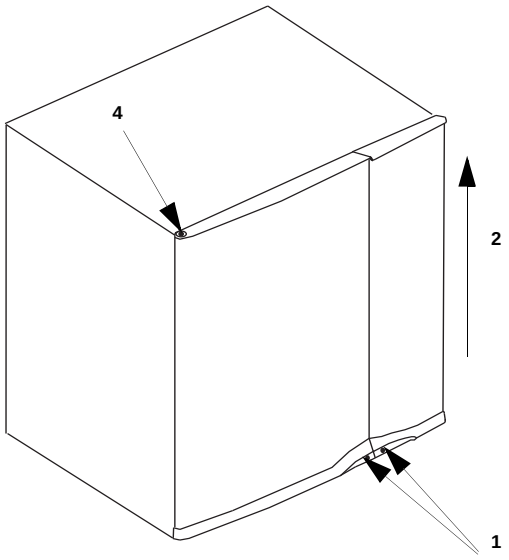
Step 21 Install the removed parts, restore power and place the toggle switch in the ICE position.

ADDITIONAL COMPONENT REMOVAL

The following components may be removed for easier access in some installations or they may need to be removed and cleaned to correct an operational problem.

Door Removal

1. Use a phillips screwdriver to loosen the two screws securing the left and right doors. Do not remove they are secured to prevent loss.
2. 30 Inch and 48 Inch Models: To remove right front door lift up and remove (22 inch ice machines have a single door, lift to remove entire door).



Door Removal

3. Open left front door to 45 degrees.
4. Support with right hand, depress top pin, tilt top of door forward and lift out of bottom pin to remove.

Water Inlet Valve

The water inlet valve normally does not require removal for cleaning. Refer to Section 5 for a list of causes for “No Water Entering Water Trough” or “Water Overflows Water Trough”.

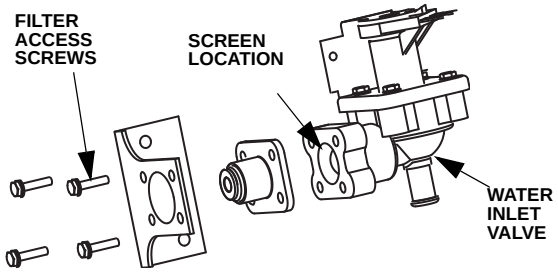
1. When the ice machine is off, the water inlet valve must completely stop water flow into the machine.
2. When the ice machine is on, the water inlet valve must allow the proper water flow through it. Set the toggle switch to ON. Watch for water flow into the ice machine. If the water flow is slow or only trickles into the ice machine, refer to Section 5.

Follow the procedure below to remove the water inlet valve.

⚠ Warning

Disconnect the electric power to the ice machine and dispenser at the electric service switch box and turn off the water supply before proceeding.

1. Remove the 1/4” hex head screws.
2. Remove, clean, and install the filter screen.



Water Dump Valve

The water dump valve normally does not require removal for cleaning. To determine if removal is necessary:

1. Set the toggle switch to ICE.
2. Verify the water trough fills with water at the beginning of the freeze cycle.
3. While the ice machine is in the freeze mode, check the water trough to determine if the dump valve is leaking. If there is no or little water in the water trough (during the freeze cycle) the dump valve is leaking.

   A. If the dump valve is leaking, remove, disassemble and clean it.

   B. If the dump valve is not leaking, do not remove it. Instead, follow the “Ice Machine Cleaning Procedure”.

Follow the procedure below to remove the dump valve.

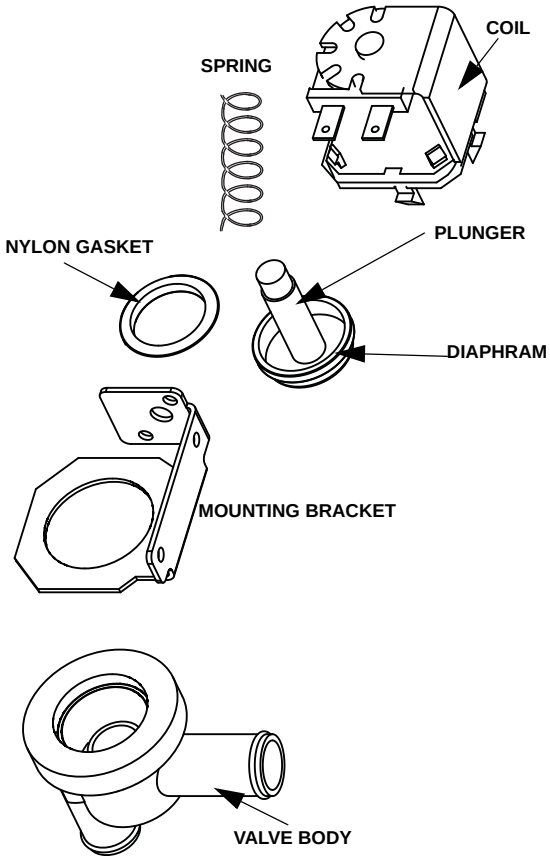
> **⚠ Warning**
> Disconnect the electric power to the ice machine at the electric service switch box and turn off the water supply before proceeding.

1. Leaving the wires attached, twist coil and rotate it counter-clockwise1/4 turn.
2. Lift the coil assembly off the valve body.
3. Remove the spring, plunger, and nylon gasket from the valve body.

NOTE: At this point, the water dump valve can easily be cleaned. If complete removal is desired, continue with step 4.

NOTE: During cleaning, do not stretch or damage the spring.

4. Remove the tubing from the dump valve by twisting the clamps off.
5. Twist the valve body to remove from mounting bracket.



Dump Valve Disassembly

Water-Cooled Condenser and Water Regulating Valve CVD1486 Only

Symptoms of restrictions in the condenser water circuit include:

- Low ice production
- High water consumption
- High operating temperatures
- High operating pressures

If the ice machine is experiencing any of these symptoms, the water-cooled condenser and water regulating valve may require cleaning due to scale build-up.

Because the cleaning procedures require special pumps and cleaning solutions, qualified maintenance or service personnel must perform them.

Ice Machine Inspection

Check all water fittings and lines for leaks. Also, make sure the refrigeration tubing is not rubbing or vibrating against other tubing, panels, etc.

Do not put anything (boxes, etc.) on the sides or back of the ice machine. There must be adequate airflow through and around the ice machine to maximize ice production and ensure long component life.

Exterior Cleaning

Clean the area around the ice machine as often as necessary to maintain cleanliness and efficient operation. Use cleaners designed for use with stainless steel products.

Sponge any dust and dirt off the outside of the ice machine with mild soap and water. Wipe dry with a clean, soft cloth.

Heavy stains should be removed with stainless steel wool. Never use plain steel wool or abrasive pads. They will scratch the panels.

Cleaning the Condenser

GENERAL

⚠ Warning

Disconnect electric power to the ice machine head section and the remote condensing unit at the electric service switches before cleaning the condenser.

A dirty condenser restricts airflow, resulting in excessively high operating temperatures. This reduces ice production and shortens component life. Clean the condenser at least every six months. Follow the steps below.

⚠ Warning

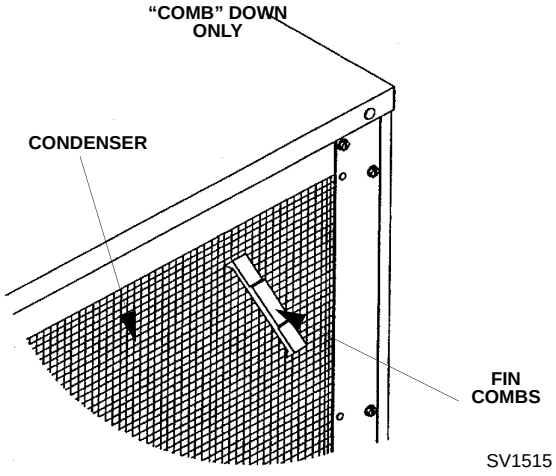
The condenser fins are sharp. Use care when cleaning them.

Shine a flashlight through the condenser to check for dirt between the fins. To remove dirt:

A. Blow compressed air or rinse with water from the inside out (opposite direction of airflow). Be careful not to bend the fan blades.

B. Use a commercial condenser coil cleaner if required to remove dirt/grease. Follow the directions and cautions supplied with the cleaner.

6. Straighten any bent condenser fins with a fin comb.Straighten any bent condenser fins with a fin comb.



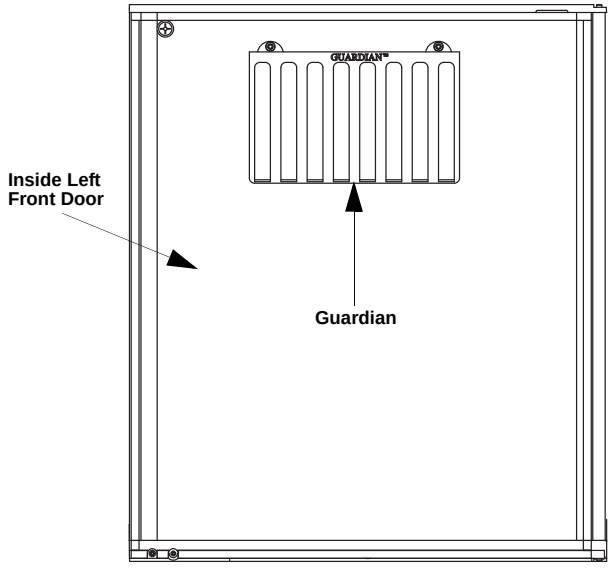
Straighten Bent Condenser Fins

Guardian

This product can be used on models S600C/S850C/S1000C/S1200C/S1470C/S1870C/S2170C - this product cannot be used on IB600C/IB800C/IB1000C due to space constraints. Slime is a leading cause of ice machine breakdowns and biological growth is a health concern. The Guardian system releases chlorine dioxide on a controlled basis to inhibit the growth of bacteria and fungi that form slime and cause malodors in the food zone of ice machines.

The Guardian will not control mineral or other water borne buildup. Your water quality will determine the length of time before mineral buildup affects ice machine performance. Mineral buildup must be removed as often as necessary to ensure trouble-free operation of the ice machine.

The Guardian sachet holder is included with the sachet packets. Refer to installation/replacement procedure to install/change sachet holder/ packet.



Guardian Location

GUARDIAN SACHET REPLACEMENT FREQUENCY

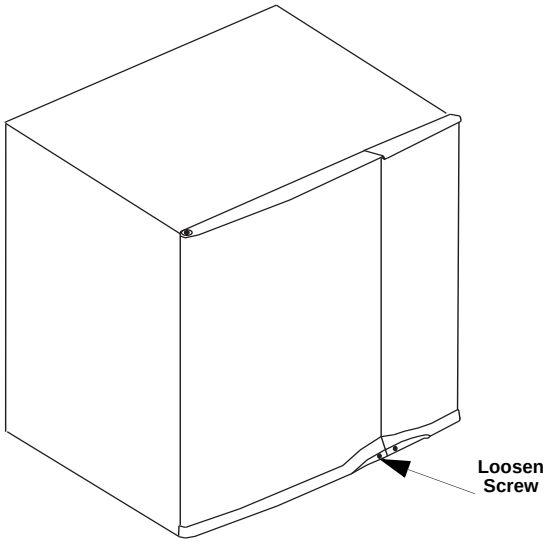
Sachet packet(s) require replacement every thirty (30) days or whenever they come in direct contact with water. Refer to chart below for requirements.

Ice Machine	Sachet Use
S600C	1
S850C/S1000C/S1200C/S1470C/S2170C	1 or 2*
*Although one sachet is recommended, extreme conditions may necessitate using two sachet packets.	

Guardian sachet packets are available through your local Manitowoc ice machine dealer.

SACHET INSTALLATION/REPLACEMENT PROCEDURE

1. Loosen the left screw and open the left front door. The right front panel does not need to be removed.



Screw Location

2. Inside the front panel there are two pegs for mounting the sachet holder. *S1470C/S1870C/S2170C Only* - The sachet holder mounts to the front top support (mounting holes may be covered by insulation).
3. Attach the sachet holder to the front panel by hanging on the pegs. *S1470C/S1870C/S2170C Only* - Attach sachet holder with reusable ties.
4. Remove the new sachet packet from foil package and install into holder. Removing the foil package allows moisture in the air to activate the sachet contents.
5. Close the left front door and tighten the screw.
6. Discard the used sachet packet in the trash.

CLEAN UP PROCEDURE FOR DAMAGED SACHET PACKET

1. Remove all ice from bin/dispenser and discard.
2. Initiate a cleaning and sanitizing sequence on the ice machine.
3. Clean the bin/dispenser. Flush the drain thoroughly to prevent future drain blockage.
4. Sanitize the bin/dispenser.
5. Install a replacement sachet packet and reinstall all panels.

Removal from Service/Winterization

GENERAL

Special precautions must be taken if the ice machine is to be removed from service for an extended period of time or exposed to ambient temperatures of 32°F (0°C) or below.

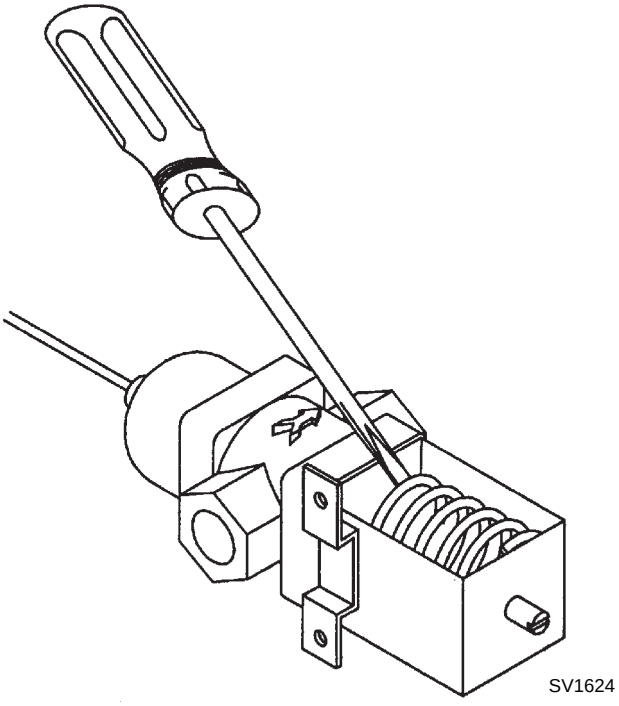
> **⚠ Caution**
> If water is allowed to remain in the ice machine in freezing temperatures, severe damage to some components could result. Damage of this nature is not covered by the warranty.

Follow the procedure below.

1. Clean and sanitize the ice machine.
2. Move the ICE/OFF/CLEAN switch to OFF.
3. Disconnect the electric power at the circuit breaker or the electric service switch.
4. Turn off the water supply.
5. Remove the water from the water trough.
6. Disconnect and drain the incoming ice-making water line at the rear of the ice machine.
7. Energize the ice machine and wait one minute for the water inlet valve to open.
8. Blow compressed air in both the incoming water and the drain openings in the rear of the ice machine until no more water comes out of the inlet water lines or the drain.
9. Make sure water is not trapped in any of the water lines, drain lines, distribution tubes, etc.
10. Fill spray bottle with sanitizer and spray all interior food zone surfaces. Do not rinse and allow to air dry.
11. “Frontseat” (shut off) the receiver service valves. Hang a tag on the switch as a reminder to open the valves before restarting.

CVD1486 WATER COOLED CONDENSING UNIT

1. Perform steps 1-11 in previous column.
2. Disconnect the incoming water and drain lines from the water-cooled condenser.
3. Insert a large screwdriver between the bottom spring coils of the water regulating valve. Pry upward to open the valve.



Pry Open the Water Regulating Valve

4. Hold the valve open and blow compressed air through the condenser until no water remains.

Section 5
Before Calling For Service

Checklist

If a problem arises during operation of your ice machine, follow the checklist below before calling service. Routine adjustments and maintenance procedures are not covered by the warranty.

Problem	Possible Cause	To Correct
Ice machine does not operate.	No electrical power to the ice machine and/or condensing unit.	Replace the fuse/reset the breaker/turn on the main switch.
	High pressure cutout tripping.	Clean condenser coil. (See Section 4)
	ICE/OFF/CLEAN toggle switch set improperly.	Move the toggle switch to the ICE position.
	Water curtain stuck open.	Water curtain or ice damper must be installed and swinging freely. (See Section 4)
	Remote receiver service valve and/or Liquid/ suction line shut off valves are closed.	Open the valve(s). (See Section 2)
	IB Only - Dispenser level thermostat open.	Adjust thermostat to maintain correct dispenser level.
Ice machine stops, and can be restarted by moving the toggle switch to OFF and back to ICE.	Safety limit feature stopping the ice machine.	Refer to “Safety Limit Feature” on the next page.
Ice machine does not release ice or is slow to harvest.	Ice machine is dirty.	Clean and sanitize the ice machine. (See Section 4)
	Ice machine is not level.	Level the ice machine. (See Section 2)
	Low air temperature around ice machine head section.	Air temperature must be at least 35°F (1.6°C).
	Fan cycling control does not de-energize condenser fan motor.	Verify pressure is below cut-out setpoint, replace fan cycling control.
	CVD1486 - Water regulating valve incorrectly adjusted or will not close.	Check for water at condenser water drain outlet. Contact a qualified service company to adjust/replace valve.
Ice machine does not cycle into harvest mode.	The six-minute freeze time lock-in has not expired yet.	Wait for the freeze lock-in to expire.
	Ice thickness probe is dirty.	Clean and sanitize the ice machine. (See Section 4)
	Ice thickness probe is disconnected.	Connect the wire.
	Ice thickness probe is out of adjustment.	Adjust the ice thickness probe. (See Section 3)
	Uneven ice fill (thin at the top of evaporator).	Verify sufficient water level in sump trough. Contact a qualified service company to check refrigeration system.
Ice quality is poor (soft or not clear).	Poor incoming water quality.	Contact a qualified service company to test the quality of the incoming water and make appropriate filter recommendations.
	Water filtration is poor.	Replace the filter.
	Ice machine is dirty.	Clean and sanitize the ice machine. (See Section 4)
	Water dump valve is not working.	Disassemble and clean the water dump valve. (See Section 4)
	Water softener is working improperly (if applicable).	Repair the water softener.

Problem	Possible Cause	To Correct
Ice machine produces shallow or incomplete cubes, or the ice fill pattern on the evaporator is incomplete.	Ice thickness probe is out of adjustment.	Adjust the ice thickness probe. (See Section 3)
	Water trough level is too high or too low.	Check the water level probe for damage. (See Section 3)
	Water inlet valve filter screen is dirty.	Remove the water inlet valve and clean the filter screen. (See Section 4)
	Water filtration is poor.	Replace the filter.
	Hot incoming water.	Connect the ice machine to a cold water supply. (See Section 2)
	Water inlet valve is not working.	Clean or replace the water inlet valve. (See Section 4)
	Incorrect incoming water pressure.	Water pressure must be 20-80 psi (137.9 - 551.5 kPA)
	Ice machine head section is not level.	Level the ice machine head section. (See Section 2)
Low ice capacity.	Water inlet valve filter screen is dirty.	Remove the water inlet valve and clean the filter screen. (See Section 4)
	Incoming water supply is shut off.	Open the water service valve.
	Water inlet valve stuck open or leaking.	Replace the water inlet valve.
	The condenser is dirty.	Clean the condenser. (See Section 4)
	High air temperature entering condenser.	Air temperature must not exceed 130°F (54°C) CVD675/CVD1185/CVD2085 - 120°F (49°C) CVD1486 - 110°F (43°C)
	The harvest assist air compressor is not functioning.	Call for service.

Safety Limit Feature

In addition to the standard safety controls, such as the high pressure cutout, your Manitowoc ice machine features built-in safety limits which will stop the ice machine if conditions arise which could cause a major component failure.

Before calling for service, re-start the ice machine using the following procedure:

1. Move the ICE/OFF/CLEAN switch to OFF and then back to ICE.
   A. If the safety limit feature has stopped the ice machine, it will restart after a short delay. Proceed to step 2.
   B. If the ice machine does not restart, see “Ice machine does not operate” on the previous page.
2. Allow the ice machine to run to determine if the condition is recurring.
   A. If the ice machine stops again, the condition has recurred. Call for service.
   B. If the ice machine continues to run, the condition has corrected itself. Allow the ice machine to continue running.

EC DECLARATION OF CONFORMTIY

We hereby declare that our products, ice machines and Multiplex refrigeration equipment comply with all the essential requirements of the listed EC - directives.

Manufacturer:

Manitowoc Ice, Inc.
2110 S. 26th Street, P.O. Box 1720
Manitowoc, Wisconsin 54221-1720 USA

European Distributor:

Representative of Manitowoc Ice, Inc.:

Engineering Manager. (Printed name)

Signature

Representative of European Distributor:

Model and Serial No.

Applied EC Directives:

Low Voltage 73/23/EEC
EMC 89/336/EEC
Pressure Equipment 97/23/EC

Applied Standards:

EN60335-1 Safety of household and similar electrical appliances
EN60335-2-24 Particular requirements refrigerators, food freezers and ice makers

EN55014 Electrical Motor Operated Appliances (Emissions)
EN55104 Electro Magnetic Compatability (Immunity)
EN378 -1 to -4 Refrigeration Plants

CE **

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Continuing product improvements may necessitate change of specifications without notice.

Part Number 000002477 3/08

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